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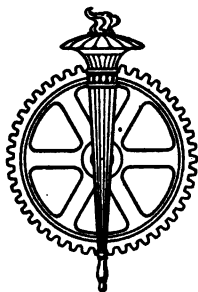
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PATENTS AS A FACTOR
IN
MANUFACTURING

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OF THE NEW YORK BAR



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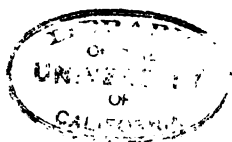
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PREFACE.

The purpose of this volume, as indicated by the author at the outset, and emphasized again in the conclusion, is not in any sense to make the inventor or the manufacturer his own patent lawyer. It is rather to convey an idea of the nature of a patent, the protection it may afford, the advantages it may possess for meeting certain commercial conditions, the safety which may be secured in relations between employers and employees, and the general rules by which the courts will proceed in upholding the patent and in thwarting attempted infringements; to show the manufacturer, in a general way, what may be accomplished by patents, but not to lead him to attempt such accomplishment without legal advice.

The design is especially to lay down the fundamental principles so that they may be grasped clearly and fully enough to direct rightly the course of the inventor, patentee, or manufacturer in the early steps which are usually taken before the advice of counsel is secured. With these points clearly in mind, the procedure may be carried forward so as to avoid the most common pitfalls, and

the reader may be clearly warned when and where it is necessary to call in expert advice.

In the preparation of the work the author has been guided by the results of wide practice, both in mechanical engineering and in patent law. The subject matter has been carefully prepared in view of his experience in patenting, litigating, and establishing many well-known inventions, and covers the points which leading cases have shown to be important and which conferences with clients have shown to be most necessary to establish in the lay mind. To the inventor and the patentee the most significant portion will be the clear outline of the precautions which should be taken in the preliminary steps, the rules and principles by which safe advance may be made up to a certain point, and the demonstration of the great advantage as well as the necessity of securing competent legal assistance in carrying the matter through the Patent Office. To the manufacturer, equal or greater significance will appear in the demonstration of the great commercial advantages which may be secured by proper use of patents in the shop, in dealing with employees, in the sales office, and indeed in the creation and pre-emption of valuable markets.

THE EDITOR.

CONTENTS.

CHAPTER I. INFLUENCE OF PATENTS IN CONTROLLING A MARKET

How Patents Have Controlled Competition in American Industries—Their Importance Recognized by Framers of the Constitution—Examples of Great Business Successes founded on Patents—Patents the Only Legal Monopolies—Their Range as Defined in Leading Decisions—How They May be Effectively Employed—Importance of Having Knowledge of the General Principles—The Scope of the Present Book Outlined..... 13

CHAPTER II. SUBJECT, NATURE, AND CLAIM OF A PATENT

The Four Classes of Inventions for Which Patents Are Granted—Definitions and Examples of Each Class—Illustrations from Leading Cases—When New Elements or New Combinations Are Patentable—The Nature of a Patent—What is Required of the Inventor—Prior Use Explained—Legal Effect of Grant of a Patent—The Claims of a Patent—What They Are Required to State—Common Misconceptions—How to Make Claims Comprehensive—Examples of Good and Bad Forms—Essential Elements of the Best Form for a Claim—What the Courts Have Held—Essential Importance of Skill and Foresight in Drawing a Patent—Proceedings in the Patent Office..... 20

CHAPTER III. WHAT PROTECTION A PATENT AFFORDS

The Terms of the Grant of a Patent—Extensions Possible only by Special Act of Congress—Why Almost Never Granted—How the Grant Is Legally Construed—Separate Monopolies Obtainable for Making, Using and Selling a Patented Article—Examples from Actual Cases—How Rights May Be Restricted as to Territory or Time—Separate Rights to Same Invention May Be Sold in Different Industries—Patent Licenses May Be Restricted as to Price, Uses, Resale, etc.—Examples from Commercial Cases that Have Been Litigated—Far-Reaching Use of Patent Rights to Secure Monopoly by Licenses—Trade Combinations under Patents Are Legal—Striking Examples from Actual Practice. 38

CHAPTER IV. OF INFRINGEMENTS

When a Patent Is Infringed—Presumption in Favor of Validity and Against Prior Use—Defenses Open to an Alleged Infringer—Defenses Which the Court Will or Will not Hear—Examples from Leading Cases—Interpretation of the Claim of a Patent—How the Courts Will Construe Favorably to the Patentee—Instances of Valid and Invalid Claims—Infringement by a Structure Equivalent to the Patented Structure but Avoiding the Terms of the Claim—Examples—Principles Adopted by the Courts in Such Cases—Avoiding Infringement by Limiting the Claim by the Former Art—Ruling of the Courts—Infringement by Improvements—Avoiding Infringement by Omitting an Element of the Claim—The Courts will Read an Element into, but Usually not out of, a Claim—What Range of Equivalents the Court will Grant to a Patentee—Process Claim May Be Infringed even when Different Apparatus Is Used—Repair and Reconstruction

of Patented Devices—How Restricted—Contributory Infringements—How Enjoined—Patentee Protected Against Unlicensed Home Manufacture of his Invention for Sale Abroad—Against Unlicensed Foreign Manufacture for Import—Injunctions and Damages—Marking of Patented Articles—Design Patents.....	50
---	----

CHAPTER V. PATENTING A NEW PRODUCT

What Protection Is Possible for Monopoly of a New Product—The Three Direct Forms and Two Indirect—Examples—Patents on the Product—Patents on the Process—Patents on the Machine Which Makes the Product—Patents on the Blank from Which the Product is Made—Protection by Tying the Product up with Another Patent—Effects and Desirability of Each Mode—Precautions to Be Observed—Investigations Necessary—Rights of Part Owners of a Patent—Avoidance of Claims of Older Products or Processes—Time Allowed before Patents Must Issue—Summary.....	69
---	----

CHAPTER VI. PATENT RELATIONS OF EMPLOYER AND EMPLOYEE

The Three Principal Points in These Relations—Employees' Inventions; the General Rulings of the Court in Leading Cases—When the Employer Will Be Held to Be the Inventor—In Whose Names Patents Must Be Taken—The Law of Inventions Made by an Employee—Examples of Valid and Invalid Contracts—Important Decisions Illustrating the Accepted Points—Contracts the Employer Should Make with Employees Covering Inventions—Employer's and Employee's Liability as to Infringements—Employees, if Vested with Discretion, May Be Enjoined—Liability of Foremen and Mechanics,

How Limited—Summary of the Points upon Which a Manufacturer Should Be Well advised as to the Law of Patents.....	84
--	----

CHAPTER VII. CONTESTS BETWEEN RIVAL CLAIMANTS TO AN INVENTION

Patent Office Contests Usually Decided by Early History of the Invention Before it Reaches the Patent Office—Inventor Should Understand General Principles and Direct His Procedure Accordingly from the Outset—The Elements of the Inventive Act—Mental Conception and Reduction to Practice—Illustrations from Well-Known Inventions—Diligence Necessary in Reducing an Invention to Practice—The Nature of the Conception of an Invention—Illustrations from Leading Cases—How the Date of Conception May Be Proved—Special Instructions for Inventors—Caveats; Their Use and Their Disadvantages—The Reduction of an Invention to Practice—How Made Safest and Most Complete—Danger of Discrediting a Reduction to Practice by the Inventor's After-Conduct—A Successful Working Model May Constitute Reduction to Practice—Physical Reduction to Practice not Always Essential—Illustrative Cases—Diligence; How Construed in Patent Cases—Interferences and Contests Between Rival Claimants—Guiding Principles Followed by the Patent Office—Preliminary Statements; What They Must Contain—Typical Cases Illustrated by Diagrams.....	103
---	-----

INDEX.....	131
------------	-----

PATENTS AS A FACTOR IN MANUFACTURING.

CHAPTER I.

INTRODUCTORY; INFLUENCE OF PATENTS IN CONTROLLING A MARKET.

PATENTS have been one of the most important factors in the growth of the United States from a group of poverty-stricken, non-manufacturing dependencies to the greatest manufacturing country in the world. In fact the late Senator O. H. Platt of Connecticut, one of the profoundest minds in the United States Senate for the past thirty years, maintained that the American patent system has been the greatest factor in the material development of the nation.

The framers of the Constitution of the United States thought the encouragement of inventing of sufficient importance to provide in the Constitution for the granting of patents. George Washington gave his personal attention to the granting of at least one patent, and one is still in existence which bears his signature. Originally the President,

the Secretary of State and the Attorney General, as a board, granted all patents, until patents became sufficiently numerous to require more attention than they could give to the matter. Patents are the subjects of important and exhaustively considered treaties between the principal countries. Almost all civilized countries have patent systems, even including Japan.

Patents are the best and most effective means of controlling competition. They occasionally give absolute command of the market, enabling their owner to name the price without regard to cost of production, as for example where they cover all known forms of devices for accomplishing a given purpose. There are a number of great companies whose position commercially is, or has been, due almost wholly to the possession of controlling patents.

Among such corporations are the Bell Telephone Company, which, while it does not now depend largely upon its patents, was able to control the situation absolutely for many years, and to get itself so well located that it now has a practical monopoly in many cities, because of its being the first to occupy the field. The United Shoe Machinery Company is today in control of the manufacture and sale, or licensing, of the bulk of shoe-making machines, because of its patents; and this control,

although several serious attempts to break it have been made by concerns heavily backed with money, the owners of the patents have been able to maintain. Ninety per cent of the welt shoes made in the United States are sewed upon machines which the United Shoe Machinery Company has been able to protect by means of its patents. The Westinghouse Air Brake Company built itself up on patents. Patents have played an important part in the development of the Westinghouse Electric and Manufacturing Company and the General Electric Company. They have indeed become so well recognized a factor in commerce that these concerns, and many others, keep a large corps of inventors at work with a view constantly to improve their product so that they will be able to offer a product that is at least slightly better than that of their competitors, and which is so protected by patents that they do not have to compete with an article of equal merit. The time when the patents on their present products will expire is constantly kept in view, and they endeavor to have new ideas, similarly protected and ready to put on the market when the patents under which they are at present working shall have expired.

The reader will be able to recall many devices and processes which are now, or until recently have been, entirely within the control of a single con-

cern. Take, for instance, the most successful forms of any of the following devices: the air brake, the cash register, the steel car, the most popular stopper for beer bottles, the form of shoe-lasting machine most in use, the process of making the best armor plate, the commercial process of making calcium carbide, from which acetylene gas is generated, as well as the commercial form of the carbide itself; the incandescent gas-lamp, the phonograph and the graphophone. Even if a patent covers only the single feature of a device which makes it commercially the most desirable of its kind, still such a patent, so far as holding the market at the old price is concerned, often gives a complete monopoly. A patent covering a process or a machine for making a staple article, which process or machine effects such a saving in the cost of production as to enable its owner to undersell all others at a fair profit to himself, is as valuable, while that condition lasts, as a patent on the article itself, for the effect is to give him control of the market.

Patents are the only legal form of absolute monopoly. And they are absolute so far as they go. In a recent decision the court said:

Within his domain, the patentee is czar. The people must take the invention on the terms he dictates or let it alone for seventeen years. This

is a necessity from the nature of the grant. Cries of restraint of trade and impairment of the freedom of sales are unavailing, because for the promotion of the useful arts the constitution and statutes authorize this very monopoly.

The possession of suitable patents is, therefore, of great importance to the manufacturer. On the other hand, it is equally important to the manufacturer whose competitor has patents, to understand what limitations, if any, there are to his competitor's advantage, and how, if at all, a counter-advantage may be gained.

If a manufacturer develops an invention of value, he should patent it, even though he might not care to be able to prevent his competitors from using it; because, if he does not patent it, someone else may patent it and may then sue for an injunction to prevent his use of the invention, and it is much cheaper to patent an invention than to defend a suit for infringement of someone's else patent. This is not at all an impossible occurrence, but has actually happened.

Having shown from this brief sketch the importance of the subject, the purpose and scope of this book may thus be stated:

I have found, in my practice of the law, that many—in fact most—owners of patents and of patentable inventions do not fully understand what

their rights are under their patents; what, for instance, can be accomplished by means of them; how they can be bought and sold; how, while getting all the benefit possible in their own arts, those who own patents can sometimes make money out of their patents by permitting others to use the invention in other and non-competing arts; to whom an invention belongs that is worked out by an employee; how to protect oneself from being supplanted by improvements made by one's own employees; how to prevent a manufacturer's product from being used in a way not intended, or sold at a price below that desired by the patent owner.

As the rights to a contested patent—that is, a patent which is being contested for by two or more inventors—depend upon acts which took place before the inventor came into the patent office by his application for patent, it is highly important that he should know how to manage these previous acts so as to put himself in the best position to win the contest. It is, therefore, important that those interested in patents should know the principles upon which these contests are decided.

While I do not aim to make the manufacturer his own lawyer, I do wish to open his eyes to what it is possible to do in connection with patents, not for the purpose of his doing it unguided by legal

advice, but of suggesting to him to what ends to ask such advice. There are many manufacturers who could and would strengthen their position commercially through patents, if they but saw the neglected material at hand, or understood the fuller possibilities of material, of the availability of which they are already partially aware. With this introductory definition and limitation of purpose, therefore, I shall outline briefly and generally the nature and scope of a patent, the protection it affords, infringements and their remedies, the patenting of a new product, the patent relations between employer and employee, and contests between rival claimants to an invention, with the principles settled in each case by rulings of the United States courts.

CHAPTER II.

THE SUBJECT, NATURE, AND CLAIM OF A PATENT.

FIRST we must fix in our minds what things may be the subjects of patents. There are four classes of inventions for which patents are granted, viz, arts, machines, manufactures and compositions of matter. It is not intended to give exact definitions of these classes of inventions, but merely to illustrate their scope, so that a manufacturer may be led to inquire whether or not an invention that falls under his control is patentable. My observation has been that the mistake is often made of failing to patent inventions which might have been patented, but which the layman decided for himself were not patentable.

With this explanation, I may say that an art may be any process, or series of steps or operations, for accomplishing a physical or chemical result. As examples may be mentioned: the art of telephoning by causing undulations of the electric current corresponding to the sound waves of the spoken voice; or of casting car wheels, which consists in causing a jet of molten metal to enter the mold in a

tangential direction to give the metal a whirling motion, so that the heavy sound metal will flow to the rim of the wheel and the cinders and bubbles will thus not occur on the rim. ✓ The patentability of a process does not depend on the apparatus with which it is carried out. The apparatus may be old, and the process may consist in a new way of using old apparatus. The fact that no new mechanism may be required in practicing the process is apt to mislead the manufacturer into thinking there is no patentable invention present. In the case of the process of casting car wheels, the same old mold and ladle could be used, and the invention consisted in holding the ladle so that the metal would strike the mold tangentially and thus get whirling motion in the mold, instead of simply pouring the metal straight in, which would mix the cinders, bubbles, and sound metal together.

A manufacture is anything made by the hand of man that is not an art, machine, or composition of matter. A safety pin, a tooth brush, and a whistle are all articles of manufacture.

A machine is any assemblage of mechanical elements having a law of action of its own. A steam engine and a jack knife are both machines. The distinction between an article of manufacture and a machine is not important.

A composition of matter is any mixture or com-

ination of chemical elements, whether solid, liquid, or gaseous; such as calcium carbide, from which acetylene is made, acetylene itself, a soap, or a tool steel.

A new combination of old elements may be patentable, if it produces a new or improved result, or an old result in a new way. For instance, a lamp making an annular flame with a central draft was old. Lamps with a solid flame using a chimney were old. The chimney on the lamp with the annular flame produced a highly beneficial result, and this new combination of old elements was patentable.

A combination of elements may be patentable as a whole, and some of its sub-combinations may be patentable. For instance, if a machine formed staples out of wire and inserted the staples through the eye of a shoe button and fastened the button on a shoe, the machine as a whole might be patentable, and the sub-combination of elements which formed the staple might also be patentable by themselves, so that if anyone used this sub-combination to make staples for use in fastening carpets to the floor, the sub-combination would be infringed.

A new form of an element of a combination that is old as a whole may be patentable. Improvements and attachments on old machines may be patentable. Edison, Blake, and Berliner all

improved the Bell telephone and all received patents for their improvements. As later pointed out, however, merely improving the invention of a prior patentee does not give the improver a right to use the principle of the earlier invention without permission from the patentee.

A new use of an old device or machine or process may be patentable, if the new use is so different from the old use as not to be obvious to an ordinary skilled workman in the art. There was no successful machine for attaching stays to the corners of paper boxes. Such a machine was invented and patented and suit for infringement brought; the defense was that the machine was almost identical with a machine for addressing newspapers, and that it did not require the genius of an inventor to make the changes necessary to adapt it to attach box stays instead of strips having addresses on them to newspaper wrappers. It was shown that several of the addressing machines had been on the market for many years. The Supreme Court said, notwithstanding this fact:

It never seems to have occurred to anyone engaged in the manufacture of paper boxes that they could be made available for the purpose of attaching strips to the corners of such boxes. This very fact is evidence that the man who discovered the possibility of their adaptation to their new use was gifted with the prescience of an inventor. While none of the

elements of the new machine taken separately or perhaps in a somewhat similar combination was new, their adaptation to this new use and the minor changes required for that purpose resulted in the establishment of practically a new industry and was a decided step in advance of any that had heretofore been made.

* * * * * With all the anticipating devices before us, it is apparent that the mere change in the shape of the die was a minor part of the work involved in so changing the addressing machine as to make it perform a wholly different function, the invention consisting rather in the idea that such change could be made, than in making the necessary mechanical alterations.

In such a case, and with all subjects of patents, the courts require that the alleged invention or discovery be one that is not obvious to the ordinary skilled workman in the particular art, and they hold it must be so far from obvious as to require the exercise of the inventive faculty. The new use must be so far from obvious from a knowledge of the old use of the machine, that it would not occur to the ordinary skilled workman in an art.

The substitution of one old material for another may be patentable, although ordinarily it is not patentable. The substitution of rubber in the stud of a stocking supporter for metal or wood, was held to be patentable, because it made a successful supporter which would neither let the stocking slip nor tear it, and this, although everyone knew that rub-



ber clings to cloth and would not tear it as readily as metal. This was an exceptional case, however, because the invention although greatly desired and long striven for, had not before been produced.

The Patent Office recently held it to be patentable to substitute forged steel for cast steel in a one-piece body of a safe. It may be patentable to use an old process for a new purpose, just as much as to use an old machine.

There was a peculiar construction of tooth which had been used in a horse rake. A tooth of like construction was used in a weeding machine, but in the weeding machine it had an action which, if present in the horse rake, would have been a disadvantage. It was held that it was patentable to use the old tooth in the weeding machine.

In finishing diamonds of the larger sizes and poorer colors, it is customary to divide the diamond into a number of pieces to make several smaller diamonds, because the poor color is less noticeable in a smaller diamond than in a larger one and because there is little sale for large diamonds of poor color. A patent was obtained for a process of dividing the larger diamonds into smaller diamonds, by which a considerably larger weight of smaller diamonds was obtained than by the previous processes for this purpose. In defense to a suit for infringement, it was shown that the same procedure

was old in sawing up wood for certain purposes, and that the old wooden procedure was for the purpose of saving material. The court, however, held that diamond cutting and wood sawing were so far from being analogous arts, that the old wood process did not invalidate the diamond process.

There is no rule by which all cases can be judged, but each case is decided on its own merits. If an invention has long been sought for without success, the courts will usually sustain the patent, no matter how obvious the invention appears after it has been disclosed.

THE NATURE OF A PATENT.

A patent is a public grant, in the nature of a contract between the Government and the inventor. The inventor on his part is required to disclose fully a new and useful invention or discovery which he has made himself. If the invention is not new to the public at the time the inventor makes his invention, then the inventor has given nothing to the public which it did not already have. If the inventor has kept back some essential part of the invention, so that he has not fully put the public into possession of a knowledge of the invention; if the invention is not operative, or is injurious to the public health or morals, so that it is not useful; if the patentee did not invent or discover the inven-

tion, but learned of it from others—then in all these cases he has not given the public a proper consideration for the patent, and the patent is invalid.

The law also requires that the invention shall not have been described in a printed publication or have been in public use or on sale for more than two years before the inventor filed his application.

While a prior public use of an invention will invalidate a patent, a prior secret use of an invention will not invalidate a patent to a subsequent original inventor. The reason is that the public, not having had access to the secret use, may never know of it, and is no better off than if the invention had never been made, and that knowledge of the invention may pass out of existence by the death of those who practice it secretly. Therefore, the law rewards the subsequent inventor, who not only makes the invention but gives a knowledge of it to the public. For instance, there was a man who invented a shoe-making machine, and he not only invented it, but he built a number of the machines and stored them away. His machine was useful only in connection with another machine on which the patent (which belonged to someone else) had not yet expired. He therefore could not sell his machine until the patent on the prior machine expired, and if he took the patent out on his own

machine before the expiration of the earlier patent, the portion of the life of his patent overlapping the earlier patent would be unproductive. He stored his machines away, intending to wait the expiration of the patent and then to patent his machine and put it on the market. While, however, he was concealing his machines, another inventor invented the same machine and applied for a patent. In a contest which subsequently arose, the second inventor was awarded the patent.

✓ A patent consists of a deed, signed and sealed by the Commissioner of Patents, granting to the inventor the exclusive right for seventeen years to make, use, and sell the invention, and referring to the attached specifications and drawings (if there be drawings) for a disclosure and definition of the invention.

人 The grant of a patent purports, as just stated, to give the inventor the right to make, use, and sell the invention; but in legal effect it really gives him only the exclusive right to prevent others from making, using, and selling the invention. If his invention happens to embody the principle of some invention that is covered by a previous patent, the owner of the previous patent can prevent the making, using, and selling of any embodiment of the later invention using the earlier principle, and the later patentee must either make terms with the

earlier patentee or wait until the earlier patent is dead. But the later patentee can prevent the earlier patentee or anyone else from using the later invention during the life of the later patent. This situation arose when Edison, Blake, and Berliner improved the Bell telephone. Their telephones were immeasurably better than Bell's telephone, and yet they all embodied the principle which Bell had patented. Therefore, none of these improvers could use his telephone without Bell's permission, and the result was that their patents came under the control of the owners of the Bell patents.

THE CLAIM OF A PATENT.

As some, and even the greater part, of the machine, or other device shown in a patent may be old and not patentable, and the part invented by the patentee may be, and usually is, less than the whole, the patentee is required to state in terms just what his invention consists in, and such a statement or statements are called "claims." This is so that the public may know what it is free to make, use and sell, and what it must let alone. In the early days of our patent system there was no way by which it could be told from the patent itself what was public property and what was not, and the patent was held to cover all that it showed, minus whatever the defense showed to be

old. This was so unsatisfactory a method that the patentee was afterwards required to point out the part, improvement, or combination to which his improvement related, and it is the clauses in which he thus delineates his invention that are called "claims."

The claims are the measure of the grant, the latter (but for the name of the patentee and the title of the invention) being the same in all patents. There is no piece of English composition that is more generally misunderstood than the claim of a patent. But the general nature of a claim (which is all I propose to treat in this chapter) is not beyond the comprehension of the layman.

A claim is not a statement of advantages of the invention, but it is a more or less precise technical description of the invention. A strange thing about a claim is, that the more it says, the less it means. As a specific example: suppose John Doe invented a turret lathe, consisting of a bed having a head-stock on one end, a spindle journaled in the head-stock and a chuck on the spindle, a slide mounted on ways on the bed, a turret on the slide, a series of tools in the turret, a rack on the slide engaged by a pinion on the bed, and a hand wheel for turning the pinion, so that the slide and turret could be advanced to cause each tool to engage the work. His claim might read as follows:

I claim a machine tool consisting of the combination of a bed having ways, a head-stock on said bed, a spindle journaled in said head-stock, a chuck on said spindle, a slide mounted on said ways, a turret revolubly mounted on said slide, a series of tools mounted in said turret, a rack on said slide, a pinion journaled on said bed and engaging said rack, and a hand-wheel for turning said pinion, whereby a piece of work may be secured in and revolved by said chuck, whereby said turret and tools may be advanced against and retracted from the work, and whereby said turret may be turned to bring its various tools into cutting position.

Now suppose Doe's turret lathe was the first machine ever invented in which the work was revolved, and a tool mechanically held on a slide was moved against the work. The principle of his invention, stated as broadly as that, is found in a lathe without a turret; in a boring mill; in a pipe-threading or cutting machine, and other machines; and under the supposition that his was the first machine to move a tool mechanically against a mechanically-revolved piece of work, all of these other enumerated machines are supposed to have been invented after his machine. But they are not described by his claim; because, for instance, they do not have the turret with its series of tools. So the courts would hold that they were not his invention as stated in his claim. And yet they all manifestly use his principle of mechanically revolving

the work, and moving a mechanically-held tool against the work.

The courts will not allow a patentee who states in his claim that his invention consists of the combination of five elements, to claim infringement by a machine that has only four of those elements, and has no equivalent of the fifth element. While they will imply or read an element into a claim from the specification, if such element is necessary to make the combination stated in the claim complete and operative, and thus save the claim from being void, they will never read an element out of a claim. So, although the claim above is a fairly good word-picture of the machines which embodies Doe's invention, it is evident it does not protect the principle or essence of the invention.

Suppose, now, the claim read as follows:

I claim a machine consisting of the combination of a frame, means mounted on said frame for revolving a piece of work, guides on said frame and extending toward the position of the work, a part mounted in said guides, a tool on said part, and means for moving said part to carry the tool against the work.

This claim is just as true a description of the Doe lathe, so far as it goes, as was the first claim, and yet it is an equally true description of a lathe without a turret, of a boring mill, and of a pipe-cutting or a pipe-threading machine. So that Doe could

justly claim those machines were within his monopoly and that they could not be made, used, or sold without his consent while his patent was in force.

The popular idea is that the more complete a description a claim is of the particular embodiment of the invention shown in the patent, the better claim it is; but the example of the Doe claim shows the fallacy of this idea. It is as though the claim were a bill of sale giving title to cattle on a large Texas ranch. If it gave title to "all the short-horn Durham steers having one white forefoot and three red feet," the purchaser would get very few cattle. If, however, the bill of sale gave title to "all the live stock" on the ranch, the purchaser would not only get all the short-horn steers with only one white foot, but he would get all the steers of every description, and all the heifers, bulls, horses, and pigs there might be there.

The mistake arises from supposing the best form of claim to be a detail description of the particular embodiment of the invention shown in the patent, when it should be a description of every class of machines which embodies the principle of the invention, whether or not the details not essential to that principle are copied. In other words, the claim is not a list of elements, whose virtue is greater the larger the number of elements enumerated; but it

is a description of a class of combinations of elements, and the fewer elements stated, the larger the class of machines is likely to be in which that combination of elements is found.

Perhaps another simile may not be amiss. A claim is like giving one the title to everything that can be found that will fit into a box. Now if no particular kind of box were specified, the grantee would have a very valuable monopoly. Everything that would go into a square, or a round box, or an oval box, or into a star-shaped box would be his. But if the box were stated to be a round box having a pin set up in the centre of its bottom and extending up to a level with the top of the box, it is evident nothing could be put into the box but round things having a hole through the middle, and the grantee would have a very much less desirable monopoly.

The popular misunderstanding is doubtless due to the fact that, as before stated, the actual language of a patent is a grant of the exclusive right to make, use, and sell the invention, while its legal effect is only a grant of the exclusive right to *prevent others* from making, using, and selling the invention. The language of the patent is to this effect: "John Doe is hereby granted the exclusive right to make, use and sell a machine consisting of the combination of elements A, B, C, etc.," and the longer the list of elements, the larger appears the

monopoly granted. The legal effect, however, is: "John Doe is hereby granted the exclusive right to prevent others from making, using or selling any machine consisting of the combination of elements A, B, C, D, etc.," and the longer the list of elements, the fewer machines there will be that will answer the description and come within his monopoly.

An instance of a brief claim is the following from a patent recently issued by the Patent Office:

A safe, consisting of a combination of a body formed of a single piece of forged steel, with a door.

This is the patent referred to on page 25 as covering the substitution of one old material for another in a one-piece safe body.

The Supreme Court of the United States has said that the claim of a patent is one of the most difficult pieces of English composition to write. It is often thought that the particular wording of a patent is not important, the skill required being in enforcing the patent in court; but it must now be clear that there is great opportunity for skill and foresight in drawing the patent. A well drawn patent may make plain sailing in court, while a poorly drawn patent often has a hole in it through which serious competition can escape.

It will be apparent from what has been said that there is much opportunity for the exercise of skill

and ingenuity in the preparation of an application for patent. The patent can be so prepared that any substantial variation from the embodiment of the invention which is illustrated in the patent, will avoid the patent, and thus a monopoly of little value be obtained. On the other hand, it can be so drawn that the soul of the invention, however embodied, will be covered by the patent. In fact, in drawing an application for patent one should be capable of foreseeing how an ingenious competitor would vary the inventor's embodiment of the invention in order to retain its advantages, while apparently not using the invention. A well prepared patent tends to prevent litigation, because if it is drawn with sufficient skill there may be no opportunity whatever to argue that the alleged infringing device does not come within the monopoly granted.

PROCEEDINGS IN THE PATENT OFFICE.

In the Patent Office, the examining force is grouped into forty divisions, and the various arts are assigned to one or more of these divisions. In this manner, all applications for inventions relating to a certain art or sub-division of that art are examined by a single man or group of men, and an opportunity is afforded to become highly proficient in the particular art. The examiners compare the

claims of an application with the patents of the prior art, and if they think the claims are broad enough to include anything shown in the prior art, or what is described in any book or foreign patent or any prior public use, of which they know, they reject the claims on these supposed anticipations. On behalf of the inventor, the examiner must then either be convinced that he is wrong and induced to withdraw his rejection, or the claims must be changed to avoid the examiner's objection. If the claims are to be changed, it is, of course, very desirable to keep them broad enough to grant a valuable monopoly, while narrowing them sufficiently to avoid the objection. From the rejection of the primary examiner, an appeal can be taken to a Board of Appeals, consisting of three members, and from them to the Court of Appeals of the District of Columbia. There are certain other moves which can be made in the courts to obtain a patent, if none of the foregoing moves is successful.

CHAPTER III.

WHAT PROTECTION A PATENT AFFORDS.

THE life of a patent is seventeen years from the date of publication, unless (as is the case of some patents granted before a recent change in the law) the term is shortened by the earlier expiration of a foreign patent for the same invention by the same inventor.

The terms of patents can be extended only by special acts of Congress, and no such extension has been enacted for many years.

It may seem inequitable, when an inventor has not received a fair return after seventeen years of the life of his patent, not to grant him an extension; but in order that inventing may be stimulated, it is necessary that patents should have a definite term beyond which they will not be extended. No one is going to spend money improving an art on the expectation that on a certain date he will be at liberty to use his improvement, if the parent patent is liable to be extended for a second term of seventeen years. During this second term of the parent patent, the improvement patent would not be of any use to the improver unless he could make

terms with the first patentee, and there might even be a period at the latter end when the improvement patent would be dead and the parent patent in force, so that the parent patentee could use the improvement invention without tribute.

The grant of a patent is in the following language:

These Letters Patent are to grant unto John Doe, his heirs or assigns for the term of seventeen years from the fifteenth day of May, one thousand nine hundred, the exclusive right to make, use and vend the said invention throughout the United States and the Territories thereof.

This, as was pointed out in the first article, means the right to exclude all others from any making, using or selling of the patented articles.

To make, to use, and to sell are the only ways in which an invention is capable of commercial enjoyment. The patentee can, if he wishes, sit down and not only not use the invention himself, but prevent everyone else from making or using or selling the patented thing. If anyone else makes, uses, or sells the subject of the patent, the courts will grant the patentee an injunction against further infringement and a recovery of the profits made.

MAKING, USING AND SELLING.

Each of these three rights, to make, to use, and to sell, is a separate monopoly and may, by proper

instruments, be granted or sold separately. For instance: a patentee of a machine could grant to a manufacturer the exclusive right to make the machines for him (of course under proper restrictions as to price, etc.) and the manufacturer would be an infringer, if he used the machines or sold them to others. The patentee could then grant to a jobber the exclusive right to sell the machines (reserving proper compensation to himself such as a percentage of the profit) and the jobber would be an infringer, if he either made or used the machine. The exclusive right to use the machines could then be granted to a given consumer, who in turn would have no right to make or sell the machines.

RIGHTS CAN BE RESTRICTED AS TO TERRITORY OR TIME.

The right to make, or that to sell, or that to use can be granted for certain restricted territory instead of the entire United States. Such rights can also be restricted as to time. A certain patentee of machines for making concrete building blocks has his machines made by certain machinists, who cannot sell or use the machines. The patentee then sells the machines to persons in different cities or counties all over the United States, each machine being sold under restrictions which make its use outside of a given city or county an infringement,

so that each purchaser of a machine has no competition from that make of machine within his particular territory. Even the patentee could not use a machine within a county he has sold. A San Francisco manufacturer of a certain vault light has sold the exclusive rights east of the Mississippi to a New York manufacturer, because the San Francisco manufacturer cannot well handle the Eastern territory.

RIGHTS TO USE SAME INVENTION IN DIFFERENT INDUSTRIES.

The exclusive right to use an invention for each of several given purposes can be separately sold. For instance, a patentee of a process for making watch dials not only sold the exclusive right to make watch dials by that process, but he also sold to a separate company the exclusive right to use the process in making enamelled signs, under the same patent. The watch manufacturer would have been an infringer if he had made signs, and *vice versa*, the sign manufacturer could have been restrained from making watch dials.

Recently a process of drying gun-powder was found to be applicable to drying breakfast foods, and the owners, after getting all they had ever looked for from the patent from the gun-powder rights, reaped a second and unexpected harvest

from the sale of the rights for breakfast foods. The rights under a patent for a machine can be divided in the same way.

RESTRICTIONS AS TO PRICE, USES, RESELLING, ETC.

A license under a patent may not only be restricted to certain territory and for a certain time, but the number of specimens of the patented invention to be made by the licensee can be specified, the length of time a specimen is to be used, the price at which the patented things are to be sold, the quality and material can be provided for, and other similar conditions imposed and enforced.

Particular specimens of the patented invention can be sold under various conditions that will bind the purchaser who has notice of the restrictions. In fact, the variety of conditions than can be imposed under a patent is too large to permit a complete enumeration. Some idea of the possibilities can be had from these examples:

The owners of a patent for a machine for setting or fastening buttons on shoes, leased or licensed the machines on condition that the machines should be used only with button fasteners to be bought of the patentees. The fastener was not patented, and the condition in the license gave the patentees a practical monopoly of making the unpatented fastener, because the machine was so superior to

hand methods of setting the fasteners that the fasteners were used only in the patented machines; and yet the court sustained the license as valid. This form of license has also been successfully used with button-setting and shoe-nailing machines that formed the fasteners or nails out of simple wire, the licensees being compelled to buy the wire of the owners of the patents.

The right to sell phonographs has been restricted to a certain territory and to selling at a certain price. The owners of the patent did not want a low price in the prescribed territory to interfere with a good price elsewhere.

A certain machine for making a large number of copies of letters is sold under a license printed on the machine requiring that all the supplies for use on the machine shall be bought from the makers of the machine.

The only commercial form of calcium carbide is sold in packages having printed on them a license permitting the use of the carbide only in lamps, and not for other purposes.

Ties for cotton bales have been sold under a restriction that they should not be used a second time. The Supreme Court of the United States held that the restriction was a valid one.

Perhaps the most far-reaching use of the license is in the case of a certain company making machin-

ery for manufacturing shoes. It has a patent on the most effective method of sewing the upper of a shoe to the sole. There are quite a number of other related machines, besides the one by which this process is practiced, that are used in the making of the shoe; but these are not covered by any fundamental patents, so that other manufacturers can make equally good machines or nearly so. In order to secure a monopoly of the entire system of machines, the company in question refuses to sell its machines which work according to the patented method, but it will only lease them, and then only on condition that the sewing machines shall not be used with any other of the related machines except such as are made by the same company. In this way, an effective monopoly of the entire system is maintained. Payment is taken in the form of a royalty on each pair of shoes operated upon.

There are many other conditions embodied in the same lease. The title to the machines remains in the owners of the patent. The licensee not only expressly admits the validity of the patent on the method of sewing shoes, but he admits the validity of a large number of other patents which are enumerated in the lease, and he agrees that the termination of the lease shall not release or discharge him from his admission of the validity of the enumerated patents. The shoe manufacturer can neither take

any part off of the leased machines nor add any improvement to them. He is to pay the owner company for keeping the machines in good repair, and to obtain all repair parts from such company. He is to make only certain specified types of shoes. He is to supply original reports from the operatives of the machines as to the number of shoes operated upon, and such reports are to be sworn to if required. He is to use no other machines than those of the lessor company for doing the specified operations—that is, he cannot run part of his factory with the lessor's machines and part with machines bought elsewhere, whether or not these latter machines are used on shoes operated on by the leased sewing machine—on penalty of having all machinery leased from such company removed from his factory. The shoe manufacturer cannot terminate the license, but only the owner company.

TRADE COMBINATIONS UNDER PATENTS.

The power which a patentee has to dictate the conditions under which his monopoly may be exercised has been used to form trade agreements throughout practically entire industries, and if the purpose of the combination is primarily to secure benefit from the patent monopoly, the combination is legitimate. Under such combinations there can be effective agreements as to prices to be main-

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tained, with penalties for violation of the agreement. The output for each member of the combination can be specified and enforced under penalties, and many other benefits which were sought to be secured by trade combinations made by simple agreements can be added. Such trade combinations under patents are the only valid and enforceable trade combinations that can be made in the United States. There are many instances of such combinations.

The numerous manufacturers of shoe lasts in the United States are many of them combined into a Last-Maker's Association by means of licenses under certain patents, and this association dictates the prices at which the lasts are to be sold, so that a uniform and advantageous standard of prices prevails.

Nearly all the manufacturers of rubber tires in the United States were recently combined by means of licenses under certain patents, and while the agreements were held by the court to be invalid because of two conditions, the following provisions were held to be valid: Each manufacturer was to pay a specified royalty. The prices were fixed at considerably better figures than had before prevailed in the market. The product of each licensee was limited to a certain per cent of the product of all, and if a given licensee made less than his quota,

he was to be paid a certain per cent on the value of the shortage, and if he made more than his quota, he was to pay a largely increased royalty on the excess.

The manufacturers of sockets for electric lamps are combined by means of licenses under patents, and the manufacturers of chainless bicycles were combined in a similar manner.

Manufacturers and importers of about 72 per cent of the gasoline automobiles sold in the United States are combined by means of licenses under a certain patent. The licensees pay a small royalty, but that royalty is more than compensated for by the savings made possible in the conduct of their business by the co-operation with other manufacturers. They enjoy, among others, the following advantages from their combination: The association has agents throughout the United States who will sell the machines made by any member of the association, but they cannot sell unlicensed automobiles. Each member of the association has agreed not to aid or abet others in infringing the patent, wherefore he cannot deal with an agent selling an infringing machine, and this, although agents do not directly receive licenses, prevents their handling unlicensed machines. The association maintains a traffic department in charge of a specialist in that branch, an experienced freight-

traffic manager, and through it secures for all automobile manufacturers and owners the proper and best freight rates and transportation facilities. The association arranges exhibitions and public tests for the benefit of its members, from which unlicensed manufacturers infringing the patent are excluded, as to admit unlicensed manufacturers would indirectly be an infraction of their covenant under the license not to aid or abet the infringement of the patent. The members of the association have monthly meetings, at which there is an interchange of ideas in manufacturing, very greatly to the benefit of all the members. The association has agreed upon some standardization of parts and is gradually effecting more such economies. If several members of the association are threatened with suit under patents owned by those not members of the association, the association, through its concentration of information, is in a better position to judge promptly and well of the controversy and to determine the best action to take to prevent mulcting of its members or to compensate worthy patentees fairly. The individual members of the association own over 425 patents. If one member finds that another member of the association is infringing his patent, the matter can be adjusted invariably, owing to intimacy and mutual understanding of the individual members, either by a discontinuation of the

infringement, or by the owner of the patent granting a license to the member who is infringing. If a member violates his agreement, he is liable to have his license taken away, because all of the covenants which he has entered into are tied up with the license under the patent. Thus, the licensees obtain many benefits, besides the mere right to use the machine of the patentee.

CHAPTER IV.
OF INFRINGEMENTS.

X **A** PATENT is infringed when the patented invention is either made or used or sold by a person not having any title in the patent, or not having a license or shop right under the patent. The fact that the infringer did not know of the patent is no defense to an action for an injunction. The patent is a public record of which everyone is presumed to have notice.

The infringer is generally at liberty in a defense of a suit for an injunction to show that the patent is invalid, for such reasons as that the invention was known or used by others in the country before the patentee invented it, or that it was in public use, or described in a printed publication, for more than two years before the patentee filed his application for patent. I have before pointed out that a mere secret use of the invention before the patentee invented it will not be a defense to a patent. Or he may show that the patentee was not the inventor of the invention, but that he learned of it from others. Or he may show that the patentee abandoned the invention before taking out his patent.

There are other defenses which can be availed of, but these are the principal defenses.

A patent, being a public grant, is presumed to be valid, and only the strictest proof of a prior knowledge or use of the invention will avail in defense. In fact, the same strictness in this matter is required as in proving guilt in a criminal case. The courts will only hold a patent to be invalid because of a prior use of the invention, where the evidence is so strong as to convince the mind beyond a reasonable doubt.

I said that the infringer was *generally* at liberty to set up these defenses, because it is not every infringer who will be heard to say that the patent is invalid. For instance, if the infringer has previously signed an agreement, such as the license for the Shoe Machinery Company before mentioned, in which he has admitted the validity of the patent, the court will not hear him say that the patent is invalid. If the infringer has sold the patent to the patentee, then again, the court will not let him plead the invalidity of the patent, although that defense may be open to all the rest of the world

A man invented a machine and sold it to a company manufacturing veneer and having its factory in New York. The inventor afterwards went to another city and offered to build similar machines for another company. Before it was discovered



what he was doing, he had his machine complete and ready to ship to the woods where it was to be used. The company owning the patent learned of the situation at this stage and applied for a temporary restraining order, without notice to the patentee or the second company, to prevent use of the machine and its shipment to the woods. The restraining order was granted, and the patentee would not have been heard to say in defense that the patent was invalid.

An infringer cannot escape by showing that he independently conceived of the invention without knowledge that the patentee had invented it, unless the infringer can show that he made the invention before the patentee made it. Neither will it help an infringer to show that his device is also the subject of a patent because of some improvement which he has introduced over the invention as shown in the patent sued upon, because so long as he uses the principle of the invention of the patent sued upon, he infringes, no matter how much of an improvement his particular embodiment of that principle may be. This point will be more fully treated in the chapter on Infringement.

It is infringement to make, use, or sell what is covered by only a single claim of a patent having a number of claims. Each claim is in itself a separate monopoly.

INTERPRETATION OF THE CLAIM OF A PATENT.

As a device that is charged with infringing a patent is seldom a Chinese copy of the embodiment of the invention which is illustrated in the patent, it is necessary to determine what is the scope of the claims of the patent, or what are the limits of the monopoly.

The terms used in a claim are often capable of several different meanings, as are many other words of the English language, and, therefore, a claim may have several different interpretations. The claim also may be unskilfully drawn, and in a suit for infringement the court has to determine what is the exact invention that was sought to be protected and then to choose that one of the several possible interpretations of the claim which will most nearly protect the invention. It is a fundamental rule of law that the interpretation of the claim which is most favorable to the patentee shall be chosen, and the actual invention thus protected to its full measure if it is possible to do so without violence to the meaning of the language of the claim. In this interpretation the courts will not allow justice to be perverted because of an unfortunate name of a part. It is the office or function which the part performs, the principle on which it is constructed, and the mode by which it is used

in the operation of the invention, that is regarded rather than the mere name by which the part is designated in the claim.

The precise protection which a patent will afford under various conditions can best be illustrated perhaps by examples. It is the *idea* which is shown in the patent, rather than the particular embodiment of the idea, which the patent protects.

AN INSTANCE OF AN INVALID CLAIM.

Suppose the patent in question illustrated a shaper consisting of a pedestal having a slide on it, upon which the ram carrying the tool is mounted, the ram of course moving in its own guideway on the slide, and the work being mounted on a table that is adjustable on the pedestal by hand screws. Suppose, also, that the slide having the guideway for the ram is moved between each two strokes of the ram to feed the tool for the new cut. Suppose the claim in the patent were as follows:

A metal-working tool, consisting of the combination of a frame having a table for supporting the work, a slide carrying a tool, and means for causing a relative reciprocation of the tool and table.

When suit for infringement was brought, the person sued would be at liberty to plead any of the defenses enumerated in the first paragraph under "The Nature of a Patent," in Chapter II. Suppose

the defendant showed that, before the invention of the shaper by the patentee, a planer of the ordinary type had been made and publicly used, the claim would be fully answered by the planer. The planer, it is true, would have the table reciprocating and the tool stationary during a cut, while the shaper would have the tool reciprocating and the table stationary, but the claim merely says that the tool and the table shall have a relative reciprocation, which description applies to the tool and table of the planer just as truly as to those in the shaper. This claim would therefore have to be held invalid, and the defendant would escape, if this were the only claim.

INFRINGEMENT BY A STRUCTURE AVOIDING THE
TERMS OF THE CLAIM BUT EQUIVALENT
TO THE PATENTED STRUCTURE.

A carefully drawn patent, however, does not depend upon a single claim for protection, because of just such contingencies as that which has just been pointed out, and such patents usually have a series of claims of various degrees of breadth or scope, so that, if a broad claim is held to be invalid, the narrower claims may be resorted to. Suppose, then, the patent contained a second claim as follows:

A metal-working tool consisting of the combination of a frame, a table on said frame for the work, a ram

carrying a tool, a guideway for said ram, means for reciprocating the ram, and means for adjusting said guideway laterally between each two reciprocations of the ram.

This claim would not be anticipated by the planer, because it states that the tool is carried by the ram or moving part and it includes "means for reciprocating the ram" which are not found in the planer.

Suppose the machine complained of had the ram moving in a stationary guideway and gave the feed motion to the table, instead of to the guideway of the ram. The machine complained of would then avoid the literal terms of the claim, because it would have no means for adjusting the guideway of the ram laterally between the reciprocations of the tool. If, however, the patentee of the shaper patent were the first ever to invent a shaper of any sort—that is, the first to invent a machine tool in which the tool has a straight-line motion and the work is stationary and the tool moves during the cutting stroke of the tool—it would be very unjust if the supposed infringing machine could escape the patent, because the infringing machine would have all of the well-known advantages of the shaper, even though it did escape the literal terms of the claim. After the first inventor had shown how to make a shaper, it would be comparatively easy for a competitor to ring such a change on the patented

structure as that which we have supposed, viz., to feed the work table instead of the ram.

While the one who drew the claim should not have limited it in the way we have supposed, in actual practice such unfortunate claims are very commonly met with, and the reason probably is that the draftsman of the claim has before him the inventor's particular embodiment of the invention and does not have enough ingenuity or foresight to see how an infringer could embody the same principle in a different form, or to grasp the gist or principle of the invention and state that without unnecessary limitation. To meet such situations as this, the courts early adopted the principle that an inventor is entitled not only to what he claims, but to every equivalent of what he claims, and the courts defined "an equivalent" to be that which performs the same function in substantially the same way. This definition is necessarily indefinite, and its indefiniteness is made very useful by the courts, as will appear. In the case of a pioneer inventor—that is, the first to invent a machine for a given purpose, such as the supposed inventor of the shaper—the courts will construe almost anything that performs the same function to be an equivalent. In the present case, the courts would hold that, although the claim did state that the tool slide was moved laterally to produce the feed, it is the mechanical

equivalent of that construction to move the work table laterally for the same purpose, because, after the inventor had shown how to make a shaper having the feed movement applied to the tool guide-way, it was comparatively easy merely to reverse the matter and apply the feed motion to the work table. And so the courts would enjoin the manufacture, use, or sale of the machine in question.

**AVOIDING INFRINGEMENT BY LIMITING THE CLAIM
BY THE PRIOR ART.**

But, in the last instance, suppose that the shaper patentee did not invent the first of all shapers, but was simply the first to invent a shaper in which the feed motion was given to the tool slide, instead of to the work table. In this case, if the defendant proved that it was old, before the invention of the patentee, to use a shaper having the feed motion applied to the work table, instead of to the tool slide, the courts would say to the patentee: "Your claim cannot be held to include the machine you complain of, because, if it includes that machine, it will also include the machine which was made and used before your invention, and your claim will therefore be invalid." The court would therefore dismiss the bill of complaint and allow the manufacture, use, and sale of the machine complained of to continue.

INFRINGEMENT BY IMPROVEMENTS.

Suppose, now, that the patentee having the claim last recited brought suit against a manufacturer whose shaper had the feed motion applied to the tool slide, but there was this difference between the machine of the patent and the machine complained of, namely; that in the machine of the patent the feed motion is applied to the tool slide by a hand-operated screw, whereas in the machine complained of, the feed motion was applied by an automatically turned screw. In this case, the defendant would probably say: "My machine is different from the complainant's machine, because I have an automatic-feed motion, while he has only a hand-feed motion." The answer to the defendant is, that he has used the principle of the patented invention, even though he has improved it, and so long as he uses that principle he is an infringer. He cannot take what the patentee has invented and build upon that as a foundation, even though he go much further than the patentee went, for he is using that which is the patentee's property.

AVOIDING INFRINGEMENT BY OMITTING AN ELEMENT OF THE CLAIM.

Again, suppose the machine in the patent had a rotatable work holder on the table and means

for rotating the work holder, and suppose the claim in the patent were as follows:

In a shaper, the combination of a frame, a table supported on the said frame, and a rotatable work holder supported on the said table, means for rotating said work holder, a tool-carrying ram, and means for reciprocating said ram.

Suppose the machine complained of had every part exactly like the machine in the patent, except that there were no rotatable work holder, and of course no means for rotating it. Suppose, also, that there was no prior art of any sort, so that the patentee was entitled to the broadest possible interpretation of his claim. Still, the courts would not hold the claim to have been infringed, because the patentee had chosen to make a rotating work holder, and the means for rotating it, elements of the claim; and the machine complained of does not have these elements, nor any equivalents of them. In other words, if a claim includes the elements A, B, C, and D, and a competitor can make a machine which will accomplish the same purpose with only the elements A, B, and C, and without the element D, or any equivalent thereof, the competitor's machine cannot be enjoined under the claim. The courts will go a great way to sustain a patent and make it effective, but when a patentee has said in his claim that his invention consists of a given num-

ber of elements, he will not be allowed to say it consists of a less number. The courts will read an element into a claim, by implication, to make it complete and its structure operative—that is, to include enough elements to produce the mechanical or physical effect stated but they will never read an element out of a claim.

Every patentee is entitled to some range of equivalents in the interpretation of his claim, the extent to which he is entitled to equivalents depending upon whether his invention was a long or short step in the art. If he was the first to produce a machine for a given purpose, almost any machine for the same purpose will be held to be an infringement. If, however, his invention consists in some slight change or improvement in a previously existing machine, it is only machines that are very slightly different from his machine that will be held to be infringements. It is by thus giving the term “equivalent” a greater or less breadth, that the courts give a patent greater or less scope commensurate with the breadth of the invention.

Changes of form or proportion will not avoid a charge of infringement, unless the invention lies in the particular form or proportion which is departed from. If the device of the changed form or proportion does not differ in principle or mode of operation from the patented device, it will not escape the charge of infringement.

The principles stated with reference to machines apply with equal force to the three other classes of inventions which can be protected; namely, arts or processes, manufactures, and compositions of matter.

PROCESS CLAIM INFRINGED, ALTHOUGH A DIFFERENT APPARATUS WAS USED TO PRACTICE PROCESS.

A process is infringed whenever the steps of that process are followed, whether or not the same apparatus is used in practicing the process. There was a process for manufacturing fatty acids and glycerin from fatty bodies, in which the fatty body was mixed with water in the proportion of two or three parts of fat to one of water, and the mixture was heated to about 612 degrees F., and was subjected to a pressure sufficient to prevent the heat from converting water into steam. The claim was:

The manufacturing of fatty acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.

The heat was applied to the outside of the vessel. The infringer only used about 310 degrees F., and he added a percentage of lime to the water with the fat; he reduced the pressure to correspond with the temperature, and he obtained the temperature by means of superheated steam introduced into the



vessel, instead of heat applied outside the vessel. Notwithstanding all these differences in the apparatus and procedure, the Supreme Court of the United States found infringement.

REPAIR AND RECONSTRUCTION OF PATENTED DEVICES.

A patented device which is worn out cannot be repaired, even if its separate parts are not patented, and cannot be repaired or its parts replaced, if in doing this the identity of the machine is destroyed. The patentee cannot be deprived of the profit which he should justly have on a new machine by constructing a new machine under the guise of repair or replacement. And if the gist of the patented invention lies in a single part, when that part has worn out it cannot be replaced without infringement.

CONTRIBUTORY INFRINGEMENT.

Where the claim of a patent covers a combination of several elements, it is an old trick for two or more parties to arrange so that each of them shall supply part of the combination and the purchaser shall put them together and thus make the patented thing. The purchaser may thus construct only one of the patented devices, and it may therefore not be worth while to sue him; but the courts have held that where a part of a patented combina-

tion is made with the purpose that it shall be used with other parts to make up the patented combination, the maker of the first mentioned part is a contributory infringer and can be enjoined. In this way the manufacturer can be enjoined instead of the consumer, and the real source of the trouble reached. For instance, there was a patent granted upon the combination of a certain burner and lamp chimney. A manufacturer sold the burner without the chimney, with the intention and recommendation that the consumer should use it to complete the patented combination, and the consumer bought the chimney where he could. The burner alone was not patented, but the claim was for the combination both of the burner and the chimney. The manufacturer of the burner pleaded that he was not making the combination claimed. The court, however, held that as he made a part of the combination with the intention that it should be used with the rest of the combination, he was an infringer and should be enjoined.

MANUFACTURE IN THIS COUNTRY FOR SALE ABROAD AND IMPORTATION OF PATENTED DEVICES.

As a patent gives the patentee the exclusive right to make, use, and sell the patented invention, and as each of these rights is a separate monopoly, it is infringement to make the patented article in the

United States, even though it be for sale in a foreign country. Likewise, it is infringement to import into the United States devices which are covered by United States patents, even though those devices are made abroad. The American patentee of a watch is entitled to prevent a Swiss watch-maker from making his watch in Switzerland and importing it into this country.

INJUNCTIONS AND DAMAGES.

There are three remedies for the infringement of a patent. An injunction can be obtained restraining the further manufacture, use, or sale of the patented invention. This elimination of competition is the chief benefit of a patent. } Besides the injunction, the damages which the patentee has suffered through lost sales or other pecuniary injury can be recovered, if they can be proven. Instead of the damages which are suffered because of the infringement, the patentee may recover the profits which the infringer has made out of the unlawful manufacture, use, or sale of the patented invention. In this case, also, the amount must be proven by the patentee. It is because of the difficulty of proving profits or damages that I stated that the chief value of the patent is the injunctions which it may afford against competition. For the purpose of ascertaining the amount of the infringer's

profits, the courts will compel him to render an account. The courts will grant a patentee both damages and profits from the infringer.

Under certain circumstances, the courts will grant a preliminary injunction at the outset of a suit for infringement, restraining the alleged infringer during the continuance of the suit and until the matter is finally determined. This will be done, for instance, where the patent has already been adjudicated and the new defendant does not set up any substantially different defense from those considered in the previous suits. It will also be done where the public has generally acquiesced in the validity of the patent.

MARKING PATENTED AND UNPATENTED ARTICLES WITH NOTICE OF THE PATENT.

If a patentee wishes to recover damages from an infringer, he must always show that he has always marked the patented article with the word "Patented" and the number or date of the patent, or that the infringer had actual notice of the existence of the patent. It is therefore customary to mark articles made under a patent with a notice of the patent. There is a penalty for falsely marking unpatented articles "Patented" or for intentionally marking a patented article with the wrong patent number.

One very large company manufacturing shoe machinery does not put any patent numbers on its machines. The reason is that it does not want intending competitors to be able to select out from its hundreds of patents the particular patents to be avoided in making a competing machine, nor to be able to foretell on just what patents a suit for infringement would be brought.

DESIGN PATENTS.

A mechanical patent covers the mechanical principle of the invention, and may cover it without any reference to the appearance. That is, two machines looking wholly unlike, but operating upon the same principle, may infringe the same mechanical patent. The law, however, provides for the protection of the appearance of an article, if it is of sufficient artistic merit so that it can be said to have required invention to produce it. Thus, the appearance of a stove may be protected by a design patent, and any stove made according to that design would be an infringement, no matter what the interior arrangement of chambers, passages, shelves, etc., might be. In fact, the appearance of the exterior of the stove might be the subject of a design patent, and the mechanical structure of the interior the subject of a mechanical patent, and a competitor might infringe the design patent

and not infringe the mechanical patent, and *vice versa*.

Stated in homely language, the test of infringement of a design patent is whether or not the competing article is so similar in appearance to the patented article as to deceive the ordinary purchaser familiar with that class of goods, so that he might buy the competitor's article under the supposition that he was buying the patented article.

CHAPTER V.

PATENTING A NEW PRODUCT.

THERE are three forms of direct patent protection which it is possible to use to obtain a monopoly of a product and one form of indirect protection. The first and best protection would be that of a patent on the product itself. In order to obtain a patent on the product the product must be new. If the product is one which is covered by a patent, but for which the patent is about to expire, it would not be sufficient merely to make a slight improvement, because the patent would cover only the improvement. The form of the product covered by the original patent would be public property and anyone could make or use or sell it. It is quite often supposed that by getting a new patent, not only is the improvement covered, but the elements of the product which were the subject of the first patent are also protected. I have shown in the fourth chapter, under the heading "Avoiding Infringement by Omitting an Element of the Claim," that to omit an element of a claim without substituting any equivalent is to avoid the claim.

Thus, if the improved product had five elements, A, B, C, D, and E, and the product as covered by the original patent had only four of these elements, A, B, C, and D, the patent on the improvement would cover the use of only the elements, A, B, C, and D, without the element E; and, moreover, the second patent, if it had the effect of covering the product of the first patent, would be void because it covered what must become public property at the expiration of the first patent.

For instance, in the first planer, the return of the table was no quicker than the cutting travel. Suppose the patent on this planer were about to expire, and in an attempt to extend the monopoly, the inventor had invented the quick return. The second patent would protect the quick return, but anyone else could make the planer without the quick return, for that was the subject of the first patent, and on the expiration of that patent, what is disclosed became public property. If, however, the quick-return planer could displace the old planer, because of its greater efficiency, the monopoly would practically be extended.

If the product could be so greatly improved as completely or largely to supplant the old form, then a patent on the improved product would practically extend the monopoly.

While it may seem impossible to improve a pro-

duct so as to secure a new patent, this is frequently being done. In a paper on "The Art of Inventing," published in the proceedings of the American Institute of Electrical Engineers for July, 1906, and reviewed in the issue of THE ENGINEERING MAGAZINE for September, 1906, I have endeavored to analyze the procedure in making such a new invention.

An exceedingly interesting instance of an attempt to prolong the monopoly after the expiration of the original patent, is the case of the telephone. The main Bell-telephone patent was issued in 1876 and expired in 1893. In 1877 an application for patent was filed by Berliner, and this application was kept alive in the Patent Office until 1891, when the patent was issued. The best form, and practically the only commercial form, of telephone transmitter is the loose carbon or microphone transmitter, and the Bell Company contended that this Berliner patent covered this transmitter. In 1903, the patent was held by the court to cover only a transmitter having metallic contacts, and not to cover the microphone transmitter; but if the company's contention had been sustained, the monopoly would have extended from 1876 to 1908.

The second way in which the product can be protected is to patent a process of making that product, by which the product can be made either of a quality which is superior to any similar product

on the market, or by which it can be made cheaper than any other product of the same quality.

The method of casting car-wheels described on the first page of the second chapter is an instance. The commercial process of making calcium carbide is another instance. In this case both the only commercial process for making calcium carbide and the only commercial form of calcium carbide are the subject of patents owned by the same concern, so that there is a double protection. The Harvey process of making armor plate was, until a better process was discovered, another instance.

Every product is made by some process; that is, as stated in the second chapter, by a series of steps or operations for accomplishing a physical or chemical result. In most cases the process is old and is therefore unpatentable, and this is what the courts mean when they say that the mere function of a machine is unpatentable; but if the series of steps or operations performed by the machine is radically different from any series of steps ever performed for the same purpose, it may be patentable.

If the process covers the only possible way of making the product, the process is as good protection as the patent on the product itself. The Bessemer process of making steel afforded a practical monopoly of the kinds of steel that were adapted

to be made by that process. The process was so cheap that for the same kinds and qualities of steel, no other process could compete.

The patent on the product covers the product, whatever may be the process or machine used in manufacturing. The patent on the process covers the process, whatever may be the apparatus used in practising the process. It is of course desirable to patent both the product and the process, if possible. In the case of the phonograph, both the machine and the method by which it reproduces sound were the subject of patents, affording a double protection.

In an effort to control a certain product as long as possible, the product itself was first patented. Then, in order to provide against the contingency of the patent on the product being declared invalid, and also to extend the monopoly beyond the term of that patent, it was decided to obtain, if possible, patents covering all feasible processes of making the product. There were two steps or operations which were essential to the production of the product, and upon consideration it was seen that there were but three orders in which those steps could be performed; first, in the order A-B, and then in the reverse order B-A, and then both steps together. Order A-B was the old order, but it did not produce an article having the desired qualities. The

inventor had already invented the order B-A, but he proceeded to invent a way by which both steps could be performed together, and the patenting of the two processes consisting of the order B-A and then the two steps together would cover generically all possible ways of making the article, and by arranging to have the patents on the processes not issued until after the patent on the article had been issued, he would extend his monopoly so long as the patents on the two processes were in force, because no one could make the article without using one of the two processes. Others might invent ways that were better in detail than those invented by the inventor in question, but as whatever way was invented would be certain either to use the steps in the order B-A or to use both steps together, such new ways would be certain to embody the broad principle covered by one or the other patent and could thus be enjoined. The blank out of which the article was to be manufactured was also patented and, finally, machinery which was necessary to carry out the processes was patented. It is hardly within the range of possibility that enough of the patents can be upset to make the article, the blank, the necessary procedure in making the article from the blank, and the machinery for practising the processes, all public property. Moreover, the process patents were delayed in the Patent Office by an

interference contest with other claimants for the same inventions, so that their terms did not begin to run until after the patent for the article had been running some years. The process patents thus in effect extended the monopoly granted by the patent on the article a number of years beyond the seventeen years of the article patent.

A third way of protecting the new product is to patent a blank out of which the article must necessarily be made (as can be done in certain instances) or to patent a blank out of which the article can be made more advantageously than from any other blank.

The fourth way of protecting the product would be to invent a machine which would make a product of better quality or of less cost than those already on the market. Paraffined paper was practically monopolized by the invention of the first successful machine for paraffin paper.

The fifth way to protect the product would be to tie it up with some other patent. For instance, there was the button fastener for fastening buttons upon shoes, mentioned in the third chapter and on which there was no patent. These fasteners were driven by hand tools. A machine was invented for driving these fasteners by the mere movement of a treadle, the machine being so simple that it could be sold to shoe-dealers throughout the

country as well as to shoe manufacturers. The button-setting machine was sold only under licenses which permitted its use only with button fasteners purchased of the manufacturers of the machine. These licenses were valid and enforceable, and the machines practically drove the hand-setting tools out of the market. Thus the patent on the machine practically gave a monopoly of the button fastener itself, and the manufacturers of the machines were as well off as if they had a patent on the button fastener.

Another example of the protection of an unpatentable product by tying it up to a patent on something else is that of the shoe-making machines referred to in the third chapter (under the section "Restrictions as to Uses"), which were unpatented but were protected by a license on a shoe-sewing machine, the shoe-sewing machine being almost absolutely necessary to the shoe manufacturer and the shoe manufacturer being forbidden to use the shoe-sewing machine with any other shoe-making machines for certain specified operations, unless those other machines were made by the manufacturers of the patented machines.

Of course, if the product be new or be improved, the manufacturer will have an investigation made to see whether a patent can be obtained on the product, and similarly with the process for making it and the machine for making it.

It is desirable, for several reasons, to patent the new product, or process or machine for making it. The patent not only keeps down competition, but it prevents anyone else from obtaining a patent on the same thing. It is much cheaper to patent the device oneself than to defend a suit for infringement brought by someone else who has patented the invention afterwards, because, even though the patent in the latter case would be invalid, it is expensive to prove that in an infringement suit, whereas the cost of obtaining a patent oneself would be comparatively slight. If the first manufacturer patented the device, the Patent Office would reject an application for patent by the second manufacturer, in view of the patent granted to the first manufacturer. I have known of an instance where a company made an invention and put it to work in its own works, and someone else saw it in their works and patented the invention, and then sued the company which originated it. The history of inventions shows that it is generally impossible to keep them secret. It does not do to rely upon the faithfulness of employees to prevent the knowledge of the invention leaking out.

If a rival wants badly enough to know how anything is done, and is willing to spend sufficient money, he can usually get what he wants.

When a commercially undesirable form of pro-

duct is invented, it should be considered whether the principle of the form is absolutely bad, or whether it is possible that principle could be embodied in some different form that might be desirable. If there is any probability that the principle could be made use of by some competitor who might invent a more commercial application of that principle, then it is desirable to patent the commercially undesirable form embodying the principle, because the broad claims on the principle would be as valid in a patent showing the undesirable form as in a patent showing a more desirable form.

But whether or not it is found that the product or process or machine is patentable, it is also necessary to make a further investigation of the patents already granted to see whether there is any existing patent with a valid claim that can be used to stop the manufacture, use, or sale of the product or process or machine. This is a point that seems to give a good deal of difficulty, not only to the manufacturer, but to many lawyers who do not make a specialty of patents, and even to the courts. It is reasoned that if the Patent Office recognizes the new product or process or machine as being so different from all previous devices or processes of the same kind as to grant a patent upon it, then it cannot be an infringement of anyone's else patent. The Supreme Court of the United States, however,

has expressly decided that even though the new device or process may be better than all others and may be patentable, it may still be an infringement of a previous patent. When Bell obtained his patents on the telephone, a host of inventors immediately went to work to improve the telephone, and Edison, Blake, and Berliner (as before stated herein) and others produced telephones that were better than Bell's telephones; and yet they could not use their improved telephones during the seventeen years that the Bell patents were in force, without the consent of Bell, or his assignees, because their telephones, although better than Bell's, embodied the principles of Bell's invention, and Bell was entitled to an absolute monopoly of those principles, whether used in a better telephone than his or not. The matter may perhaps be made clearer by a number of comparisons. Suppose the first inventor of cast iron had obtained a patent upon the combination of iron and carbon; he would not only be able to prevent the use of this combination for making cast iron, but also for making steel in all its varieties and every form of product in which iron and carbon were combined together.

Suppose that the prior patent is infringed and no way is seen to avoid infringement by changing the product or the process or the machine so as not to embody the principle of a patented invention.

The simplest way, of course, would be to buy the patent. If the patent cannot be bought, but a fraction of the patent can be obtained, no matter how small a fraction—say one-tenth of the entire right in the patent—the owner of the one-tenth would be just as well off as the owner of the nine-tenths. The courts have held that a patent is not like the capital stock of a corporation, and that the owner of more than one-half of the title to the patent has no claim upon the owner of less than one-half. Each one is at liberty to do with his portion what he pleases, and cannot, in the absence of an agreement to that effect, be made to account to the other. The owner of one-tenth may make ten times as much out of the patent as the owner of nine-tenths, because of his greater business ability or greater capital, or for other similar reasons, and it would not be equitable to make him turn over nine-tenths of his profits to the other owner.

Competitors have been enjoined from making a product where the competitor sold a patent which he knew to be invalid, the competitor intending to get the purchase money for the patent and also to continue manufacturing the product because he knew the patent was invalid; but the courts will not permit a man to sell a patent and then to say that what he sold was worthless, so that although the patent may be invalid as against all the rest of the

world, it is valid as against the man who sold it, and the man who purchased the patent would be able to keep the seller out of the market for the balance of the life of the patent.

It is not sufficient that the new product be illustrated and described in a prior patent; if it is not covered by the claim of the patent, then the patent cannot be used to enjoin the product. Often the drawing of a patent will illustrate a big machine, but the claims will be found to cover only a small portion or detail of the machine, and it is only this portion that is described by the claim that is protected by the patent.

If a prior patent is found that has a claim covering the new product, but if it can be shown that before the invention of the prior patentee any of the defenses existed which are enumerated in the second chapter, in the section "The Nature of a Patent," then the patent can be disregarded, as no suit under the patent could be successful. There are other defenses too many to enumerate herein. If the prior patent has a claim which covers the new product or process or machine, and it can be shown that before the patentee's invention there existed, in a manner accessible to the public, a structure or process sufficiently like the product or process or machine which it is desired to put out, so that if the claim be given a broad enough scope to include

the new process or product or machine, it will also include the old structure or process—then the court may say that the claim is valid for the detail or difference which the patentee has over the old structure or process, but that it would be invalid if construed broadly enough to include the new product or process. In this way the claim may be limited by the prior art sufficiently to let the new process or product out from the charge of infringement, and yet the claim may be sustained as valid. The reasoning would be that if the patentee had not claimed the detail his patent would be invalid. Therefore the patent would not be infringed, unless that detail were used.

The law does not require that a new product, process, or machine be patented before it is put on the market, but it allows two years of public use or sale of the invention in order that the inventor may thoroughly test his article and be sure that it is satisfactory, and in order that he may earn some profits from his invention. The law distinguishes between use or sale to test an invention, and public use or sale after it is evident the invention is complete. Use to test the invention to see whether it is perfect and complete, which the law calls "experimental use," does not count. It is only two-years public use or sale after the invention is complete that will destroy the right to a patent. The case

of the Nicholson wooden pavement, which was first laid in Elizabeth, New Jersey, illustrates this. Nicholson laid his pavement in the public street, and the court held that a certain amount of use of this pavement in this public way was only experimental use in order that he might determine whether the pavement was satisfactory, and that the two years did not begin to run until the experimental period was over.

To summarize: in putting out a new product, the product should be protected by a patent on the product itself if possible. If not, then it should be protected, if possible, either by inventing and patenting a new process by which the product can be made better or cheaper than before, or by inventing and patenting a machine for that purpose. If none of these ways is feasible, it should be considered whether or not the product cannot be tied up in some way with a patent on some other product, process, or machine. In seeking to produce any of these inventions through employees, the precautions should be observed which will be stated in the following chapter.

CHAPTER VI.

THE PATENT RELATIONS OF EMPLOYER AND EMPLOYEE.

THERE are three principal points to be considered in the patent relations of employer and employee as to inventions made by them. First it is necessary to determine who in the eyes of the law is the actual inventor of a particular invention, because a patent is valid only when granted in the name of the inventor. The fact that someone else than the one who conceived the invention owns the right to the patent, or furnished the money with which the invention was developed, does not make him the inventor, and the patent would be invalid if granted in the name of the owner or the backer who did not participate in the inventive act. Second, where an employee is concerned in the making or development of an invention, it is necessary to determine whether or not the employer is entitled to the ownership of the patent granted on the employee's application and, therefore, to the right to prevent everyone else from making, using or selling the invention; and, third, if the employer is not entitled to the patent, whether he has a right

himself to make, use, and sell the invention in competition with others who might, by the employee, be given rights under the patent.

EMPLOYEE'S INVENTIONS.

Many an inventor is not a mechanic, and is not even sufficiently practical to work out the details of an invention, so that it is necessary for him to employ the skill of someone else actually to construct the invention. A complete inventive act consists of a mental conception of the invention followed by a reduction of the invention to practice. If an employer forms a complete mental conception of the invention and then has his employee construct the thing he has conceived, the employer is regarded as the inventor. The relation of employer and employee exists not only where a manufacturer uses his own regularly employed mechanic, but where any inventor employs any mechanic to reduce his invention to practice. In this sense a corporation employed to build a machine embodying an invention would be an employee as to the inventor. If there arises any controversy as to who made the invention—that is, as to whether the employer or the employee made the invention—the presumption is that the employer made it, and the employee must show by convincing proof that he made the invention before his claim will be entertained.

For instance, a shoe manufacturer had trouble with his operatives and found it desirable to have a machine for nailing the heel to the shoe which would be sufficiently perfect to require only a class of labor that could easily be trained, so that a strike of the trained operatives could be broken by training in new hands. He went to machinists and outlined a machine to accomplish his purpose. The manufacturer described the principal elements of the machine, and how they would work with relation to each other. When the machine was completed the machinists claimed to have invented certain features, and filed an application for patent in opposition to that of the manufacturer. The court held that where one is employed for the special purpose of carrying out the conception of another person, the one who builds the machine stands in the relation to the one who conceives it, of employee to employer, and there is a strong presumption that the machine, when completed, is the invention of the employer, and the court held that under the burden of that presumption, the machinists had failed to prove their case.

There was an inventor who had patented a reel for use in rod mills. He made a contract with an engineering company whereby the company undertook to install his reels wherever they had an opportunity, and the company also undertook to perfect

the machine in its details. The president of the company improved the machine in its details and filed an application for patent for the improvement. The president obtained his patent before the inventor was aware of what had happened. The inventor upon seeing the notice of the patent issued, filed an application for a patent for the same invention and claimed that he had disclosed the improvements to the president of the contracting company. The court held that the president of the company had put himself in the relation of employee to the inventor as employer, and that therefore the presumption was in favor of the inventor and against the president, and granted a second patent to the inventor. Incidentally it may be observed that there were in this case two patents in existence for the same invention, one erroneously granted to the president of the contracting company, and the other rightfully granted to the inventor for the improvements. The Patent Office has no power to cancel a patent after it is granted, but there are provisions of the patent law under which a court can declare void erroneously issued patents, and in this way the patent to the president of the contracting company could be gotten out of the way. While it was in force, it would of course be more or less of a cloud on the patent to the inventor.

In order that the employer may be regarded as

the inventor by the law, it is necessary that he do more than merely to suggest the desirability of an invention for a given purpose. He must not only suggest that desirability, but he must show, at least in a general way, how the machine, for instance, is to be constructed. If Edison had suggested to an employee that it was desirable to be able to transmit electricity with something less than two wires for every circuit, and his employee had conceived of the three-wire circuit, by which the middle wire serves both for the outgoing current of the one circuit and the incoming current of the other circuit, Edison would not have been the inventor, but the employee would have been. The idea is that until a person has actually conceived how to make an invention that will accomplish a given purpose, he has done the public no service to offer in return for a patent. The law provides only for the granting of patents to the original and first actual inventors.

Where the employer furnishes a complete conception of the invention, such, for instance, as would be evidenced by working drawings, there is no question that the employer is the inventor. It is often the case, however, that the employer has a general idea of how a successful invention could be built, but he is not sufficiently practical, or does not have the time, to work out minor features

which still require some inventing as distinguished from the skill of the mechanic. He has an idea of the main features of a machine, for instance, and how they are to operate in relation to each other, but he does not know how to arrange the gearing for operating the main parts. The employer puts an employee to work on the problem, and perhaps a good deal of experimenting is necessary before a successful result is arrived at. In this case the law regards the employer not only as the owner of the entire invention, but as the actual inventor of the details which the employee worked out. They are properly included in a patent granted to the employer as the sole inventor.

Where the employee's suggestions are so separate from the invention of the employer that they form in themselves complete inventions and are not merely auxiliary or tributary to the main invention, the employee is regarded as the inventor.

IN WHOSE NAMES PATENTS ARE TO BE TAKEN.

The law provides for the granting of patents only to the actual inventor of the patented invention, and a patent granted in the name of anyone else is invalid. For this reason it is essential that the application for patent be made in the name of the one whom the law regards as the inventor. In some factories it is the custom to patent every invention

in the name of the president of the company. This frequently happens because the company has been built up on inventions made by the president or other officer, and as a matter of pride the president wishes to see all patents issued in his name. This is a dangerous thing to do in the case of inventions which were conceived by the employee independently of the officer, such as inventions wholly worked out by employee without suggestion or assistance from the officer; for if, in a suit brought under such patent, it were shown that while the patent was granted in the name of the officer, the invention was actually made by an employee, the patent would be declared invalid, and usually a suit would not have reached such a stage until it was too late to go back and patent the invention in the name of the real inventor. This would be because a valid patent cannot be obtained on an application for patent filed more than two years after the invention has gone into public use in the United States, or after specimens of the invention have been placed on sale in the country. There are other bars which also might prevent the grant of a patent at the time mentioned; such as the fact that a description of the invention might have appeared in a publication for more than two years. The description would, however, have to be so full and complete that any person skilled in the art could make and

use the invention from the knowledge furnished by the description alone, and without the exercise of the inventive faculty.

INVENTION MADE BY AN EMPLOYEE.

Where an employer employs clever men and has them instructed in the details of his business, he lays himself peculiarly open to the possibility that his employees may make inventions which would seriously hurt his business if he had to compete with them. It therefore becomes exceedingly important to consider what are the employer's rights under these circumstances.

The mere fact that an inventor is in the employ of another when he makes an invention does not give his employer any claims upon his invention. If, for instance, the employee makes an invention out of working hours and in his own home, and does not use the time or materials or employees of his employer in perfecting the invention, the employer, in the absence of a contract, has no claim whatever on the invention even though it relates to the employer's business.

Supposing, however, the employee makes an invention in the shops of his employer, and perfects it there, using his employer's time and materials, and the assistance of his fellow-employees in perfecting the invention. There are two things to

be considered; first, the employer's right to make, use, and sell the invention; and second, his right to a monopoly of the invention—that is, his right to exclude others from making or using or selling the invention. Under the circumstances which I have supposed, the courts have held that an employer acquires a shop-right or a license to make and use the invention in his own shops and to sell the articles so made; but he does not, in the absence of a contract, acquire any right to the title to a patent on the invention, and therefore does not acquire any right to prevent others from making or using or selling the patented invention. The employee can license his employer's competitors to make and use and sell the same invention, and thus thereby create all the competition that is possible, but the employee can never enjoin his employer from making or using or selling the invention.

Even where the inventor is especially employed to invent, unless the contract unequivocally provides that the title to patents on the inventions shall be assigned to the employer, the employer cannot compel an assignment of the invention. A couple of examples of adjudicated cases will make this matter clearer:

An employee of a watch-case manufacturing company was working as a tool maker when, as the

company alleged, he came to the president and stated orally that if his wages were increased (from \$25 to \$30) he believed he could make improvements that would be valuable. No written contract was made. The employee's wages were increased and he was given men and materialsto carry out his ideas. The improvements were successfully made, and an application for patent was made, the company paying the expenses connected with it. The patent issued to the employee, and the company demanded an assignment to the company, claiming that the employee had agreed that, if the company would pay the expenses of the patent, he would assign it to the company without further consideration than his increased wages. The employee denied that he had ever agreed to assign the patent to the company, and left the employ of the company. The company brought a suit to compel an assignment of the patent. The Supreme Court of the United States refused to compel an assignment of the patent, holding that it would compel such action only in cases where a contract to assign the patent had been clearly proven, and that it was improbable the employee had offered to assign the patent, merely if the company would pay the expenses of obtaining it, and without any benefit to himself, such as a covenant to employ him for a stated period and at a stated salary.

One Hansen was chief engineer of a company making pressed-steel cars, at a salary beginning with \$4,000 and running up finally to \$10,000 per year. The company contended that at the time Hansen entered its employ, there was an oral agreement that all inventions and improvements he might make while in its employ, and any patents obtained thereon, should belong to the company. There was, however, no written contract, and Hansen denied having made any oral contract. During his employment, many inventions were made by Hansen and during the early part of the employment Hansen assigned all the patents he obtained to the company. When he finally left its employ, there were six applications pending in the Patent Office for inventions Hansen had made during his employment. These applications had been prepared by the company's attorney at the company's expense. The company demanded that Hansen assign these applications to the company, but he refused to do so. Suit was brought to compel an assignment; but Hansen resisted, saying he had assigned the earlier patents and applications, because he was young and did not realize his rights, but that was no reason why he should assign the remaining ones. The six inventions in question, Hansen said, were worked out by him in his own home and not at the company's

shops. The United States Circuit Court of Appeals held that no contract was proven and refused to compel an assignment of the applications. Then the company contended that the mere relation of employer and employee, coupled with the fact that Hansen admitted it was part of his duty to design and improve the products of the company, gave it a right to the title to the patents. But the court held that nothing short of an express contract to assign the patents to the company could give the company a right to the title to the patents, whatever might be its right to a shop right or an unassignable license. The Supreme Court of the United States has decided that even a Government employee who invented a self-cancelling revenue stamp (using Government employees and materials to work it out) and afterwards patented it, is entitled to the ownership of the patent, subject to a license to the Government to make and use the stamp.

Where, however, an employee agrees to assign to an employer patents upon any inventions which he may make while in his employment, even though the only consideration for the contract is the salary which the employee is to receive, and even though that salary is not larger than it would otherwise be, the courts will enforce the contract. I refer to two specific cases of contracts of this sort, which have been sustained by the courts.

A machinist made the following contract with a company manufacturing cigarette machines:

That the said company has this day employed the said Hulse to set up and operate its cigarette machines at a salary of \$50 for the first month, and \$65 per month thereafter, with such advance of salary up to not exceeding \$75 per month as the services of the said Hulse may justify. * * * The said Hulse agrees to do all in his power to promote the interests of the said company, and in case he can make any improvements in cigarette machines whether the same be made while in the employment of the said company or at any time thereafter, the same shall be for the exclusive use of the said company. And it is agreed, that in case the said Hulse be not able to serve the said company sufficiently, or shall in any way neglect his duty, the company may stop his services at any time, paying up to such time; but in case the said Hulse desires to quit the said company, he shall give sixty days notice thereof.

After this contract was executed, Hulse made an improvement in cigarette machines, patented it, and demanded \$100,000 from the company for it. The United States Court of Appeals held the contract to entitle the company to the title to the patent. The Court did not decide whether the provision covering inventions made after leaving the employment of the company was valid, as that was not involved in the case.

A man named Franzen entered the employ of a

company manufacturing wire-glass or glass having wire imbedded in it to strengthen it. The salary was \$100 per month, and before beginning work Franzen signed a contract containing the following provisions:

First. The employer is engaged in the manufacture of glass, glass-ware, and mechanical devices in connection therewith, and that such manufacture is carried on by means of certain secret formulas, methods, processes, tools, machinery, patterns, and appliances, and the same are the property of the employer, and intended to be kept and guarded by the employer as secrets; and that all knowledge and information which the employee now possesses, or shall hereafter acquire, respecting such secrets, and all inventions and discoveries made by said employee during the term of his employment, shall at all times, and for all purposes, be regarded as acquired, and held by the employee in a fiduciary capacity, and solely for the benefit of the employer.

Fourth. That the employee will, when required, make and execute any and all assignments in writing which may be deemed by the employer proper and necessary to transfer and vest in the employer the entire right, title, and interest in all inventions and discoveries made by the employee during the term of his employment.

The employee finally left the employ of the company and forty days afterwards applied for a patent for a method of making wire-glass. The company brought suit to compel him to assign the patent to the company. Franzen contended that he had



made the invention before he entered the employ of the company. It was shown that he had made statements to various employees that he had never seen wire-glass made before he saw it made at the works of the present company. It was also shown that on Sunday night, after midnight, and outside of the regular working time of the factory, he got the night engineer to start the engine, and that he made wire-glass with the company's machinery according to his process. Each of the three persons who were present was cautioned to keep the matter secret. The court found that the invention was made during the period of employment, and also held that the contract was mutual and was proper and necessary for the protection of the company's business, and that it was, therefore, not invalid on the ground of public policy, and a decree was granted, compelling the employee to assign the patent to the company.

The following is a contract which not only provided that the employee should assign to an employer inventions made during his employment, but also provided that if the employer did not wish to patent any of the inventions, the employee should keep them secret.

Whereas, Herbert L. Hildreth of Boston, candy manufacturer, is desirous of having perfected and manufactured a certain machine or machines for use

in the manufacture of candy, and especially for sizing, shaping, cutting, wrapping, and packing, also the pulling of molasses candy, and whereas I, Charles Thibodeau, being a skilled mechanic, am desirous of entering the employ of said Hildreth for the purpose of constructing, improving and perfecting such machinery: Now, therefore, in consideration of such employment, and of the payment of wages to me at the rate of (\$3.25) three dollars and twenty-five cents per day, I hereby agree with said Hildreth to enter his employ, and that I will give him my best services, and also the full benefit and enjoyment of any and all inventions or improvements which I have made or may hereafter make relating to machines or devices pertaining to said Hildreth's business. I also further agree that should said Hildreth not desire to patent any of said inventions or improvements, but to keep same secret, I will do all in my power to assist him in this, and will not disclose any information as to the same, or any of them, except at the request of the said Hildreth.

The employee claimed to have made an invention during the employment, and made application for a patent thereon. The employer brought a bill to compel an assignment of the application, and the employee retaliated with a cross-bill asking for the delivery up and cancellation of the contract on the ground that it was unconscionable. The court held that the contract was valid and was but a proper protection of the employer's business, and that the employee was bound to keep perpetually secret inventions made during the period of employment.

The courts realize the extent to which an employer is open to attacks by his employees in the line of inventions and are quick to protect him within the limits I have stated. There was an employee of a veneer manufacturer who invented an improved veneer-cutting machine and sold the patent to his employer. The employee afterwards went to another city and, stating to some capitalists that he knew the patent was invalid, offered to build a number of such machines for them. The employee then went to the machinists who had made the veneer cutting machines for the employer, and got a casting made from his employer's pattern of the principal part of the machine, and this casting was shipped to the other city. The employer put detectives on the matter and traced the pattern and found that a machine was completed and was ready for shipment to the timber district. The court granted a temporary restraining order, enjoining the employee and the capitalists and the machinists who had made the machine, from moving the machine until the employer's rights had been settled. The employee would never be heard to state that the patent he had sold for a valuable consideration was invalid, because he would then be seeking to destroy the value of that for which he had received pay, and the capitalists were not permitted to use the machine, because they had associated themselves with the employee.

In view of the foregoing it is evident that it is desirable to have a contract with every employee who is at all likely to make inventions which relate to the business of the employer, and as the courts will sustain such contracts, even though they contain no further provision for return for the inventions than the payment of the ordinary salary, the employer should have such a contract with every such employee. There are manufacturing concerns where every man in the drafting room and in the sales department, and every skilled employee, is under such a contract. The difficulty of inducing the employees to sign such a contract will be reduced if the officers of the company will set the example by signing such a contract. This is often a mere matter of form, as the officer is frequently a man who is either not inventive, or one who is glad to take his returns in the form of dividends from the stock.

EMPLOYER'S AND EMPLOYEE'S LIABILITIES AS TO INFRINGEMENT.

Where an employer directs an employee to make, use or sell an invention which is the subject of a patent, the employer himself is liable in an action for infringement on the principle that what one does through another he does by himself. And even where an employee commits an act of infringe-

ment, for the benefit of his employer but without the knowledge of his employer, the employer is still liable if he afterwards approves of the act, or knowingly takes benefit from the act, such as taking the profits from the sale of a machine. In considering the liability of the employer for damages, it is immaterial that he did not know that the act was an infringement of a patent. If the employee is one vested with discretion as to the conduct of the business, and he directs or commits an act of infringement, the courts in many circuits hold that the employee, as well as the company, may be enjoined. Thus, a sales agent selling goods on commission may be enjoined. A foreman of a factory is liable for infringements which he directs. But a mechanic who commits an act of infringement at the command of his employer is not liable in damages, although he may be restrained with the employer.

CHAPTER VII.

CONTESTS BETWEEN RIVAL CLAIMANTS TO AN INVENTION.

WHEN an inventor gets into the Patent Office and finds another is claiming the right to a patent for the same invention, it usually develops that his own right to prevail over the other claimant depends upon the history of the invention before the application was filed, and his success or failure in the contest will frequently depend on acts or omissions in that history which were entirely within his control, and on his ability to prove those acts which were essential. Usually, too, all this history is made before the invention is ready to patent and therefore before it is brought to the attention of counsel, so that the acts and the laying of the foundation for their proof depend entirely upon the unadvised judgment of the inventor, or those owning the invention. It is therefore of importance that those having to do with inventions should have sufficient knowledge of the general principles upon which such contests are decided to arrange those things which are in their control so as to give them the best possible chance of a favorable decision.

The production of an invention begins with a mental conception and ends with a reduction to practice. The conception of an invention does not consist in perceiving the mere desirability of accomplishing a certain object, but it consists of a complete working idea of at least the principal elements of some means for accomplishing that object, and of the correlation of those elements. This difference between a perception of the desirability of accomplishing a certain object, and the conception of the invention, might be illustrated in this way. Many people before Bell had thought of the desirability of being able to talk at a distance by means of electricity. This, however, did not benefit the public in any way. The public was no more able to talk at a distance than it had been before. Bell, however, thought out in his own mind how a telephone should be constructed which would transmit speech at a distance by means of electricity. This conception of Bell's would, if put into practice, give the public practical possession of the invention. When a telephone had actually been constructed according to Bell's conception and used, the invention was what is known as "reduced to practice." The conception alone does not make an inventive act. A man might fully conceive how to make a valuable machine, but if he never puts that conception into practice, he

has done the public little or no service, and the law does not regard him as an inventor. To illustrate further: Suppose a person perceived the desirability of making chain from a wire rod by an automatic machine. This would not in any sense be a conception of an invention within the meaning of the law. But suppose he clearly thought out the shape of the parts which were to cut off the blank from the rod and bend the blank into a link, and to thread the next blank through the link and bend it into a link, so that he knew exactly the shape and relative motions and times of operation of the several parts which would operate directly upon the blank and link. If the conception was so fully worked out that any mechanic of ordinary skill could supply what was missing in the way of gearing for operating some of these parts, the conception would be considered complete even though such parts had not been worked out. The invention would, however, be reduced to practice only when a machine had actually been constructed.

The law considers the filing in the Patent Office of an allowable application for patent the equivalent of an actual reduction to practice. Bell's application for patent for the telephone was in a contest with other inventors, and the evidence did not show that Bell ever actually made a telephone work to transmit speech before the filing of his

application for patent; but as his application for patent fully described how such a telephone should be built, the Supreme Court of the United States held that the filing of this allowable application for patent raised a presumption that he had actually and physically reduced the invention to practice at the time of filing the application, and that therefore the filing of the application was a "constructive reduction to practice" and counted for him the same as if he had actually constructed and operated such a telephone.



FIG. 1. DIAGRAM OF THE PRODUCTION OF AN INVENTION.

The theory of the law is that the production of an invention is a single act, beginning with the conception and ending with the reduction to practice, and the law awards the patent to that inventor who first conceived the invention, whether or not he was the first to reduce the invention to practice, so long as the time between his conception and reduction to practice was occupied by reasonably diligent efforts to reduce the invention to practice. This act may cover a considerable period. Many months may elapse between the conception of the invention and its reduction to practice provided the inventor is reasonably diligent in his efforts to reduce

the invention to practice, or, at the time of the advent of his rival, was exercising reasonable diligence. Thus a complete inventive act consists of a complete conception of the invention followed by a reduction of the invention to practice, the conception being coupled to the reduction to practice by reasonable diligence. The inventive act might be illustrated by the diagram in Figure 1, in which the first vertical line represents the conception, the horizontal line represents the diligence, and the second vertical line represents the reduction to practice.

CONCEPTION OF THE INVENTION.

While the nature of the conception of an invention has been pretty fully indicated before, some further discussion of it may be desirable. The conception of the invention must originate in the mind of the inventor. He cannot be entitled to a patent if he obtains knowledge of the invention in any other way than by generating the idea in his own mind. It may come in a flash, or it may be the result of months or years of experiment and thought. It may be suggested to the inventor by something not the invention. For instance, a father happened to see his little son nailing together some sticks. The boy had nothing more in mind than to drive nails into the sticks and fasten the sticks together, but as it happened there were four sticks fastened

together by four nails in a peculiar way. The child having driven the nails picked up the sticks, and as he lifted them, they swung on the nails, as on pivots. The sticks had a peculiar motion, and this motion suggested to the father a mechanical movement which he invented and applied to two different purposes and patented. Obviously, the invention never existed in the sticks. The child would have thrown them away or knocked them to pieces, and the invention would never have come into existence, if it had not been for the operation of the mind of the father on the nebulous idea contained in the sticks accidentally fastened together in a peculiar way. Thus the invention was the result of the suggestion, and yet it was a real invention supporting a valid patent.

The reverse of the mechanical-movement incident was a case of the invention of a metal bar for reinforcing concrete, which bar was provided with a large number of indentations, or corrugations on its surface to give it a strong hold on the concrete, and yet the corrugations on opposite sides were so arranged that the cross section of the bar was substantially uniform throughout its length, and thus its strength was not impaired. One of the claimants for the patent, J—, showed that he had made bars which had corrugations or indentations on opposite sides, and these corrugations were so

shallow that the cross section happened to be fairly uniform throughout the length of the bar. The corrugations, however, were not accurately staggered with reference to each other on opposite sides of the bar, and he was unable to show that at the time the bar was made he had any realization of the advantage of accurately staggering the corrugations so as to make a bar which, while roughened, would be substantially uniform in cross section. It was held that he had no conception of the invention at the time he made the bar. J— did not realize the importance of making the corrugations staggered and the next bars he should make were just as likely to have the corrugations in line with each other (in which relation they would weaken the bar) as staggered, and it was only when something later showed him the advantage of staggering the corrugations that he appreciated the invention.

A further example of the difference between the perception of the desirability of an invention and the conception of a structure to serve that purpose is the case of a machine for finishing stockings. In this machine the stockings were mounted on stretching boards and were automatically passed between gas or singeing jets. The improvement consisted of a stripping device whereby the stockings were automatically stripped off the stretching boards after the singeing had been completed.

One of the claimants sought to establish his claim of priority by showing that he had a conception of the invention at a date earlier than his opponent. The Court held that the testimony only showed that at this earlier date he had a perception of the desirability of some means for stripping the stockings off the stretching boards, but that he had no definite idea of how such means should be constructed. In other words, he had a perception of the desirability of the invention, but he could not construct the improvement or tell a machinist how to construct it. He was therefore held not to have had a conception of the invention at the date in question.

As it would obviously be inequitable to permit an inventor to establish the date of his conception of an invention by his own unsupported testimony, it is required by the Patent Office and the courts that his testimony be corroborated in some manner. The temptation to put the date farther back than it really was is strong, and the settled principle has been adopted that no earlier date will be awarded an inventor than the earliest date when he can show some corroborative evidence. This evidence would usually be the evidence of some person to whom he described the invention at the date in question, or some writing. The person to whom the invention was said to have been disclosed must be able not only to fix the date but to testify that a complete dis-

closure of the proposed structure of the invention was made to him. It will not usually be sufficient for him to allege merely that the invention was disclosed to him at a certain date, unless he can establish the correctness of the date by reference to some event which was of sufficient importance or peculiarity so that he was not likely to have been mistaken as to the date of the event, or by reference to some memorandum which he made concerning the invention at the date in question. The corroborating witness will not sufficiently corroborate if he simply testifies that the inventor gave him at that time a complete description of how the invention was to be constructed, but he will have to be able to testify as to the details of that construction—at least sufficient details so that his description answers to the requirements of a conception of the invention. He will at least have to be able to testify as to the main features of the invention.

D invented a telephone system, and testified that at a certain date he had used it. He was endeavoring to establish that date as the date of his conception and also of its reduction to practice. He called a witness to corroborate him who had assisted in the operation of the device alleged to be a conception of the invention and to be a reduction to practice of it. The witness testified clearly as to the main features of

the invention and its mode of operation, and it was shown that the system could not operate as described unless other features which the witness could not describe were present, or unless equivalents of those features were present. The opposing parties could not show that D knew of any equivalents of the unidentified features at the time the system was used, and it was held that he was sufficiently corroborated so that the unidentified features were held to have been proven.

F had no corroboration of his conception of the invention except statements in a memorandum note book which he had written. He was able to produce a witness who testified that F had such a book at a given date, but, as the witness had not seen the entry, it was held that the date was not established.

The rule that the uncorroborated testimony of an inventor cannot be held to be proof is applied in the case of joint inventors to the extent that one joint inventor cannot alone corroborate his co-joint-inventor as to their joint invention.

In the case of joint inventors the single conception must be the product of the two minds in order to be a joint invention. In other words, it is not sufficient that one inventor conceived of certain parts of the invention and the other inventor conceived of other and unrelated parts of the invention, to make a joint invention, but the conceptions of

the two minds must be so interwoven as to make together a unitary invention. For instance, if one man invented a new construction of the runner of a centrifugal pump by which a higher efficiency was obtained, and another inventor improved the bearing of the shaft of the pump, this would not be a case of joint invention, because it is obvious it would be immaterial to the more efficient action of the runner what kind of a bearing was used, so long as the friction was reduced to the same degree; and it would, on the other hand, be immaterial to the action of the bearing what sort of an object was carried by the shaft.

An application for letters patent filed in the Patent Office is of course evidence of conception of the invention at the date of filing. Since an inventor's right to a patent may turn wholly on his ability to establish the date when he first conceived of the invention, it is desirable that each step in the progress of the conception be recorded in some way. The inventor should preferably make a careful description or drawing, or both, of the idea as it first occurs to him, and should fully explain it to some person capable of thoroughly understanding it, and should sign the description and drawing himself and write the date upon it himself, and should ask the person to whom he has explained it also to sign the description and drawing. It would also be

desirable that the witness should write the date in his own handwriting, so that there could never be any question as to the correctness of the date when the signatures were placed upon it. It is also very desirable that there should be no changes made in the description or drawing after it is signed. As each additional step is worked out, if the invention is worked out step by step, the new step should be shown in a new description and drawing, carefully witnessed as the the first one.

CAVEATS.

When the inventor has a theoretically complete idea as to how an invention may be carried out, but it is evident that before the invention will be of practical value he must spend a considerable amount of time in further work and experiment, the law provides that he may file in the Patent Office a description of the invention as far as he has gone, in the form of a caveat. This caveat is notice to the Patent Office that the inventor is working on the invention, and it entitles him to notice if any other inventor files an application for patent for the same invention or an invention involving the same principles. When the application is filed in the Patent Office, the Patent Office will suspend action on the application and notify the caveator and give him a limited time in which to complete

the invention and contest with the applicant the right to the patent. Where an invention is complete, there is no advantage in filing a caveat, and there is in fact a disadvantage, because a caveat is never regarded as equivalent to a reduction to practice, while the filing of an allowable application is so regarded as will later appear. The inventor, when his invention is complete, should file an application for patent, not a caveat.

REDUCTION OF THE INVENTION TO PRACTICE.

Actual experience shows that many ideas may be described in words, or even most carefully worked out in drawings, but yet do not operate successfully when actually tried. Therefore the law requires that an inventor shall actually reduce the invention to practice by building and testing the physical thing (with certain exceptions mentioned later) before the invention will be considered complete. This reduction to practice is, as above stated, the final step in the inventive act. The inventive act consists of a mental part, the conception, and a physical part, the reduction to practice. The safest and most complete reduction to practice is the actual building and using of the device. There are some devices so simple that it is certain from a mere inspection of them that they will successfully perform their intended function, and

in these cases no test is required, but only the actual construction of the device. For instance, in a contest between two inventors over an envelope, one of them showed that he had made the envelope at a certain date but had never actually put it into commercial use. It was held that a mere inspection of the envelope was sufficient to show beyond question that it would perform its intended function, and so the mere construction of the envelope was a complete reduction to practice.

It is, however, dangerous for an inventor to stop short of actual use of the device, because it is frequently a matter of opinion whether or not actual use was necessary to demonstrate the practicability of the invention. Some very simple inventions have been held not to have been reduced to practice where the invention was constructed but not actually used. For instance, in the case of a roller bearing, the inventor who first constructed his bearing was held not to be entitled to the patent as against a later inventor, because he had not actually used the bearing. Even so simple a device as a garment hook was held to have required use to complete the reduction to practice.

It is commonly supposed that to make a drawing of an invention and have it witnessed, is sufficient to entitle the inventor to a patent, even though someone else subsequently makes the invention

and applies for a patent first. This, however, is an error. The making of a drawing, no matter how complete, is not a reduction to practice, and the inventor must either actually reduce the invention to practice by making and testing the physical thing, or constructively reduce it to practice as later described herein, by applying for a patent for it. The law rewards the diligent and not the slothful, and it would be inequitable to permit a man who had merely made a drawing of an invention to deprive another of a patent, when the second inventor had proven the practicability of the invention by actually or constructively reducing it to practice and had given the world a knowledge of it. The man who only makes a drawing of it may die and the drawing may be forgotten or lost, and the public in this case would be no better off than if the invention had never been made. The making and witnessing of a drawing is, therefore, only proof of a complete conception of the invention and not of a reduction to practice.

An inventor must be careful not to let his conduct after an actual reduction to practice be such that it will discredit the reduction to practice. If he treats the machine which he built and used in such a way as to raise the inference that he does not regard the machine as a success, he may destroy his right to a patent. For instance, a stamp-can-

celling machine was completed and operated in cancelling stamps in a post-office at Boston several hours a day for several days. This would ordinarily be a satisfactory reduction to practice, and, if the inventor had immediately filed his application for patent, he would have prevailed as against a later inventor of the same machine. The inventor of the Boston machine, however, took the machine back to the shop and partly dismantled it and then laid it aside and never again operated it or tested it in public. A second inventor made the same invention and applied for a patent, and afterwards the first inventor applied for a patent. It was held that the first inventor's conduct raised the presumption that the use of the machine in the Boston post-office was a mere abandoned experiment instead of a successful reduction to practice, and that the second inventor was the one entitled to a patent. The mere fact that a second and better machine on the same principle was made after the first machine would not discredit the first machine, but the first machine would be held to show diligence in reducing the invention to practice. The device which is claimed as a reduction to practice must be sufficiently perfect to demonstrate the practicability of the invention. It must operate successfully; but if it goes that far, it does not destroy its value as a reduction to practice to show that

the machine was crudely constructed. The mere accidental production of an invention without appreciation of what has been done is not a reduction to practice of the invention. For instance, an invention consisted in a draft pipe for an automobile, having an open upper end. W lost the cap on his draft pipe and ran his machine one day without it. It was not shown that he realized the bearing or importance of what had happened, and it was held that he had neither conceived the invention nor reduced it to practice. A mere model, further, although complete in its form, and illustrating how a real machine would be constructed, but which model was itself incapable of successful operation, is not a successful reduction to practice. A device, however, which, although intended as a model, is capable of and does actually successfully perform the intended function, is a reduction to practice even though the inventor intended to use better and different materials in the commercial manufacture of the machine, and this although the model may be only half the size of the commercial machine.

In order that a reduction to practice may inure to the benefit of the inventor, the reduction must be made by the inventor or for him. The conception and the reduction to practice must both be by the same person or the reduction to practice must be

by an agent of the conceiver. A conception by one person never followed by a reduction to practice by that person, or by any agent of that person, does not entitle the conceiver to a patent and does not interfere with the obtaining of a patent by someone else who afterwards conceived the invention and also reduced it to practice. Although A may conceive an invention, and B, without A's knowledge may reduce the invention to practice for B's own purposes, A will not be entitled to a patent because of B's reduction to practice. A can claim the benefit of B's reduction to practice only when B is acting as A's agent. For instance, an inventor conceived an improvement and made a model of it and submitted the model to the company which made the machine he had improved. The company refused to purchase the invention, but an officer of the company disclosed it to a foreman of a subsidiary company, and he built a complete machine embodying the improvement. The inventor afterwards had a contest in the Patent Office with another inventor for the same invention, and it was held that the inventor was not entitled to the benefit of the reduction to practice by the foreman, because the foreman's action was not as the inventor's agent. The company bought the inventor's rights, but it was held that this did not give the company the right to prevail in the contest between

the inventors, because this purchase did not cure the defect as to the reduction to practice.

As I have indicated, there are some exceptions to the requirement that an invention be actually and physically reduced to practice. In the case of the Bell telephone patent Bell's application for patent was in a contest with other inventors, and the evidence did not show that Bell ever actually made a telephone transmit speech before the filing of his application for patent; but as his application for patent fully described how such a telephone should be built, and as the experts of the Patent Office had decided that a telephone built as described in the application would work, and as telephones so built had worked, the Supreme Court of the United States held that the filing of this allowable application for patent raised a presumption that he had actually and physically reduced the invention to practice, and that therefore the filing of the application was a "constructive reduction to practice" and counted for him the same as if he had actually constructed and operated such a telephone at the date of the filing of his application. Thus, when an inventor has filed an application for patent which is held by the patent office to be allowable, he has done what is legally the same thing as building and testing his invention. This is very valuable, as it frequently and usually

costs much less to file an application for patent than to build and test the invention. It sometimes happens, however, that an opponent in the contest is able to show that the invention, if constructed as described in the application for patent, would not operate successfully, and if it would require more than the skill expected of the ordinary good mechanic to correct the defect, the application loses its value as a reduction to practice. It is, therefore important, when possible, actually to reduce the invention to practice.

If the inventor allows his application to lapse for any reason, it also loses its value as a constructive reduction to practice. For instance, the law requires that each action by the Patent Office on an application be fully responded to within a year. If such response is not made, the application becomes abandoned, and when it has become abandoned it is only evidence of a conception of the invention at the date of filing and is not a constructive reduction to practice. When an application for patent has been allowed, the final Government fee must be paid within six months or the application becomes forfeited, and a forfeited application, like an abandoned application, is evidence of conception of the invention only and is not a constructive reduction to practice.

DILIGENCE.

If no rival claimant enters the field, an inventor may take as long as he pleases in reducing his invention to practice, provided the public does not get a knowledge of the invention in some other way and put it into use. If, however, a rival enters the field, the first conceiver must be exercising reasonable diligence, or the second conceiver will be held to have the superior equities and be entitled to the patent. This qualification that the diligence must be "reasonable" is interpreted in each case in the light of its circumstances. For instance, it would be an insufficient excuse to say that an inventor did not have money to reduce the invention to practice, if he was at the same time spending money in other inventions; or to say that he did not have money to apply for a patent, if at the same time he were applying for patents on other inventions. It would not be sufficient to say that he was delayed by illness, if the illness only covered a part of the time. The excuse must cover the whole time with which he is chargeable. Temporary insanity or great poverty or serious illness would be a sufficient excuse. The mere making of drawings is not a sufficient excuse, if that is not promptly followed by actual construction. Evidently, the safest plan is to proceed with all reasonable speed actually

to reduce the invention to practice. The steps connected with the reduction to practice and testing of the machine or other invention should be recorded in the way indicated in connection with the conception of the invention.

INTERFERENCES, OR CONTESTS BETWEEN RIVAL CLAIMANTS.

We will now consider how the Patent Office decides some typical cases of contests or "interferences" between rival claimants.

The most important principle is, that the first to conceive the invention is entitled to the patent if he couples his conception with a reduction to practice by reasonable diligence. Another important principle is that the first inventor to file an application for patent is presumed to be the first inventor in fact, and the burden of proving that he is not the first inventor lies on the inventor who comes later into the Patent Office. This second principle shows the importance of getting promptly into the Patent Office.

Before the Patent Office lets either party know who his opponent is, it requires each party to file, under oath, what is known as a "preliminary statement." In this the inventor is required to state: (1) The date of the original conception of the invention; (2), the date upon which a drawing was first

made; (3), the date upon which the invention was first disclosed to others; (4), the date of the reduction to practice of the invention; and (5), a statement showing the extent of use of the invention. The inventor will not ordinarily be given the benefit of proof of any earlier dates than those set up in his preliminary statement, because of the strong temptation to change the dates after he has seen his opponent's dates.

Taking now a few typical cases.



FIG. 2.

A (first) conceived and (second) reduced to practice; and B (third) conceived and (fourth) reduced to practice. Here A's invention was complete before B's entered the field, and the interval between A's conception and his reduction to practice is unimportant, however great, and he is entitled to the patent. See Figure 2.

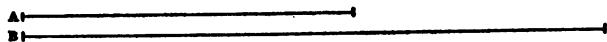


FIG. 3.

A and B conceived simultaneously, but A reduced to practice before B. Obviously A is here entitled to the patent. See Figure 3.

A (first) conceived and (second) reduced to practice, and then concealed the invention for a long

time, waiting for commercial developments that would justify his putting the invention on the market. B (third) conceived the invention; A (fourth) filed an application for patent, and B (fifth) reduced the invention to practice, having been diligent from his conception to his reduction. A's concealment of the invention puts his original reduction to practice in the category of an abandoned experiment,



FIG. 4.

since the law does not favor such concealment; and thus A's filing of his application for patent is held to be his date of conception and also his date of constructive reduction to practice. Although B did not reduce to practice until after A's application, he is entitled to the patent, because he conceived the invention before A filed his application for patent, (and therefore before A's legal date of conception) and coupled his conception with his reduction by reasonable diligence. This case is illustrated in Figure 4.

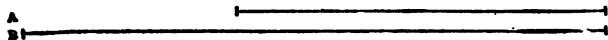


FIG. 5.

A and B simultaneously reduced the invention to practice. Obviously the equities as to the reduc-

tion to practice are equal here, and he who first conceived the invention would be entitled to the patent, provided he was reasonably diligent when the second one entered the field. This case is illustrated in Figure 5.

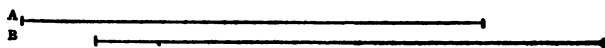


FIG. 6.

A (first) conceived the invention; B (second) conceived the invention; A (third) reduced the invention to practice, and B (fourth) reduced the invention to practice. Here B's conception took place before A's reduction to practice, but as A began the inventive act before B and carried it through to completion with reasonable diligence, he is entitled to the patent. This case is illustrated in Figure 6.

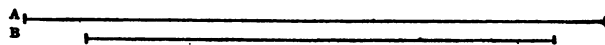


FIG. 7.

A (first) conceived the invention; B (second) conceived the invention; B (third) reduced the invention to practice, and A (fourth) reduced the invention to practice. Assuming that both inventors were reasonably diligent, A would be entitled to the patent, because he who first begins the inventive act is always entitled to the patent, if he carries it through diligently.

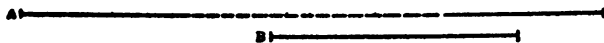


FIG. 8.

A (first) conceived the invention and made some efforts toward reduction to practice, but during an interval while he was giving his attention to other matters B (second) conceived the invention and B (third) reduced the invention to practice after which A (fourth) reduced the invention to practice. This case is illustrated in Figure 8. As A was sleeping on his rights when B entered the field, B would be entitled to the patent, as the law rewards the diligent.

This chapter is not intended in any sense to be a complete statement of the law of interferences, but is only intended to show what precautions it is necessary to observe in the production of an invention and in making records of the various steps, and to show the importance of promptness and thoroughness, because these must be attended to, if at all, before the invention is brought into the Patent Office.

This chapter concludes the present volume. As I stated at the outset, my purpose was not to make the manufacturer his own lawyer. But I aimed to give manufacturers a better idea of the nature of a patent; of the protection it affords or may

afford; of the great adaptability of patents to different commercial conditions and forms of transactions; of some of the many ways in which the courts will thwart attempts to get the benefit of an invention without the consent of the patentee; and of the ways in which the manufacturer's patent relations with his employee can be rendered safe, and fully protected. The patent system of the United States is the result of over three hundred years of legislation and of interpretation by the courts, beginning with the reign of James the First in England, and it must be evident from what little has been shown by the foregoing chapters that a system has been worked out that is thoroughly practical and that provides for every reasonable contingency. Whether or not a manufacturer likes the idea of patents, they are in existence in large numbers, and they enter into almost every line of business; he must reckon with them whether he will or not. It is therefore necessary that he have some understanding of the subject, such as it has been the object of this short review to afford.

Here

INDEX.

- Abandoned application not equivalent to reduction to practice, 122
- Abandonment of invention, 117
- Application, abandoned, not equivalent to reduction to practice, 122
- Article of manufacture, nature of, 21
- Art, nature of, 20
- Automobile manufacturers, combination of, 47
- Bars to grant of a patent, 26
- Blank patenting, 75
- Broad claim, illustration of, 35
- Caveats, 114
- Claim of a patent, defined, 29; illustration of too limited claim, 31; omission of one element voids, 32; illustration of claim that protects, 32; the less said the more it covers, 33; skill required in drawing, 35; interpretation of, 53; invalid in its terms, 54.
- Claimants, rival, to same invention, 103
- Combination, nature of, 22; new, of old elements, 22
- Combinations, trade, under patents, 45
- Competition, controlled by patents, 14
- Composition of matter, nature of, 21
- Conception of invention, 104, 107
- Constructive reduction to practice, 105
- Contests between rival claimants to an invention, 103
- Contracts with employees, examples of, 98
- Contributory infringement, 63
- Damages, 65
- Defences to suit for infringement, 50
- Degree of proof to upset patent, 51
- Design patents, 67
- Different industries, rights to use invention under same patent, 41
- Diligence, 123
- Doctrine of equivalents, 57
- Elements, may be patentable alone, 22; omission of without equivalent avoids infringement, 59
- Employee, relations to employer, 84; inventions of, to whom belong, 85; liability as to infringement, 101
- Employer, relations to employee, 84; right to invention worked out by employee, 85; liability as

- to employee's infringement, 101
- Equivalents infringe, 55
- Exportation of patented devices, 64
- Extension of patents, 38
- Form, changes of, may not avoid infringement, 61
- Grant of a patent, rights conferred by, 28; language of, 39
- Importation of patented devices, 64
- Infringement, defined, 50; not escaped by independent conception by infringer, 52; of single claim, 52; protection against suit for, by showing invalidity of claim, 54; not escaped by avoiding terms of claim but using equivalent, 55; avoiding by limiting claim by the prior art, 58; by improvements, 59; avoided by omitting an element, 59; changes of form or proportion may not avoid, 61; process claim infringed although using different apparatus, 62; contributory, 63; of prior patents, necessary to consider in putting out new inventions, 76
- Injunctions, use of, 65; preliminary, 66
- Interferences, to grant of patent, 103; principles on which decided, 124
- Interpretation of the claim of a patent, 53
- Invention, necessary to sustain patent, cannot be defined, 22; conception of, 104; records of making, 113; reduction to practice, 115; abandonment of, 117
- Inventive act, theory of, 106; records of, 113
- Inventors, corps of, employed by large companies, 15; must be corroborated in testimony, 110
- Lapsed application not equivalent to reduction to practice, 120
- Leases under patents, 42
- License under patents, 42
- Machine, nature of, 21
- Making an invention, records of steps in, 113
- Making, using and selling, each a separate monopoly, 39; rights for, may be separately granted, 40
- Manufacture, nature of, 21
- Marking, patented articles, 66; unpatented articles, 66
- Materials, patentability of substitution of one old, for another, 24
- Method, nature of, 20
- Monopoly, patents a legalized form of, 16
- Name in which patent is to be taken, 89
- Nature of a patent, 26
- New product, patenting, 69; five ways of protecting, 69; necessity for patenting, 77
- New use of old device may be patentable, 23

- Object of invention, difference between object and conception, 109
- Omission of one element voids claim, 32
- Patenting a new product, 69
- Patent office, proceedings, 36; appeals from, 37
- Patents, improvements in, and growth of, 13; provided for by the constitution of the United States, 13; what can be patented, 20; nature of, 20, 26; subjects of, arts, machines, manufactures and compositions of matter, 20; bars to grants of, 26; grants of, 28; claims of, 29; protection afforded by, 38; extension of, 38; rights under, restricted as to territory, 40; rights under, restricted as to time, 40; rights to same invention in different industries, 40; in whose name to be taken, 89
- Preliminary injunctions, 66
- Price, restrictions as to, 42
- Process, nature of, 20
- Product, protecting by improvement, 70; protecting by patenting process, 71; protecting by patenting blank, 75; protecting by patenting machine for making, 75; protecting by license under another patent, 76; necessity of finding out whether a new product infringes any existing patents, 76
- Proof to upset patent, degree of, 51
- Proportion, changes of, may not avoid infringement, 61
- Protection, afforded by a patent, 38
- Public use and sale before patenting, 82
- Reduction to practice, defined, 104, 115; filing allowable application for patent in patent office equivalent to, 105
- Repair and reconstruction of patented devices, 63
- Re-selling, restrictions as to, 42
- Rights, granted by patent, 39
- Rival claimants to same invention, 103
- Sale of new invention two years before patenting, 82
- Secret inventions, undesirability of, 77
- Secret use, may lose right to patent, 27; may not invalidate subsequent patent to another inventor, 27
- Sub-combinations may be patentable, 22
- Substitution of one old material for another, 24
- Suit for infringement, defenses to, 50
- Term of patent, 28
- Territory, restricting rights as to, 40
- Testimony of inventor must be corroborated, 110

- Theory of inventive act, 106
Time, restricting rights as to, 40
Trade combinations under patents, 45
Unpatented articles, marking, 66
Use, new, of old device may be patentable, 23; restrictions as to, 42
Validity, right to contest may be lost by agreement as to, 51; cannot be questioned by inventor, 51



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